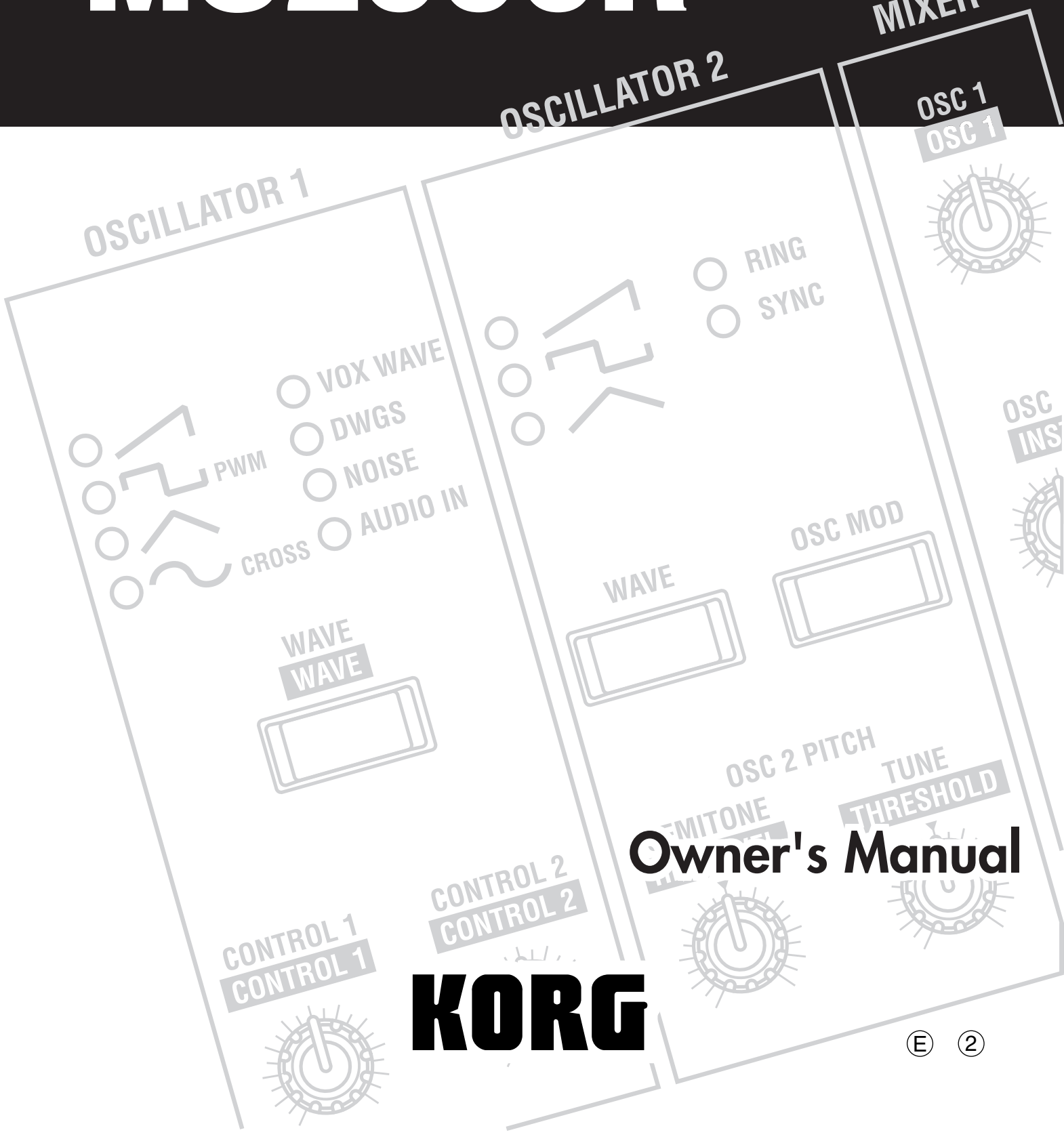
ANALOG MODELING SYNTHESIZER

MS2000
MS2000R



Owner's Manual

KORG

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To ensure long, trouble-free operation, please read this manual carefully.

Precautions

Location

Using the unit in the following locations can result in a malfunction.

- In direct sunlight
- Locations of extreme temperature or humidity
- Excessively dusty or dirty locations
- Locations of excessive vibration

Power supply

Please connect the designated AC adaptor to an AC outlet of the correct voltage. Do not connect it to an AC outlet of voltage other than that for which your unit is intended.

Interference with other electrical devices

This product contains a microcomputer. Radios and televisions placed nearby may experience reception interference. Operate this unit at a suitable distance from radios and televisions.

Handling

To avoid breakage, do not apply excessive force to the switches or controls.

Care

If the exterior becomes dirty, wipe it with a clean, dry cloth. Do not use liquid cleaners such as benzene or thinner, or cleaning compounds or flammable polishes.

Keep this manual

After reading this manual, please keep it for later reference.

Keeping foreign matter out of your equipment

- Never set any container with liquid in it near this equipment. If liquid gets into the equipment, it could cause a breakdown, fire, or electrical shock.
- Be careful not to let metal objects get into the equipment. If something does slip into the equipment, unplug the AC adaptor from the wall outlet. Then contact your nearest Korg dealer or the store where the equipment was purchased.

THE FCC REGULATION WARNING (for U.S.A.)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Unauthorized changes or modification to this system can void the user's authority to operate this equipment.

CE mark for European Harmonized Standards

CE mark which is attached to our company's products of AC mains operated apparatus until December 31, 1996 means it conforms to EMC Directive (89/336/EEC) and CE mark Directive (93/68/EEC). And, CE mark which is attached after January 1, 1997 means it conforms to EMC Directive (89/336/EEC), CE mark Directive (93/68/EEC) and Low Voltage Directive (73/23/EEC).

Also, CE mark which is attached to our company's products of Battery operated apparatus means it conforms to EMC Directive (89/336/EEC) and CE mark Directive (93/68/EEC).

Data handling

Unexpected malfunctions can result in the loss of memory contents. Please be sure to save important data on an external data filer (storage device). Korg cannot accept any responsibility for any loss or damage which you may incur as a result of data loss.

Thank you for purchasing the **Korg MS2000/MS2000R analog modeling synthesizer**. To ensure trouble-free enjoyment, please read this manual carefully and use the product correctly.

About this manual

How this manual is organized

The **MS2000/MS2000R** owner's manual is organized as follows.

Basic Guide

First read the Basic Guide to learn essential points of operation and basic procedures.

"Introduction" explains the features of the **MS2000/MS2000R**, and how its modes and programs are organized.

"Front and rear panel" explains the knobs and keys of the front panel, and the input/output jacks and switches of the rear panel.

"Connections" explains how to connect the **MS2000/MS2000R** to external audio devices, external MIDI devices, computers, pedals, and pedal switches.

"Playing" explains basics for playing the **MS2000/MS2000R** (listening to the demos, selecting sounds, using the arpeggiator, etc.).

"Editing" explains the basic procedures for editing sound parameters and global parameters, and describes how the main parameters are edited.

Parameter Guide

This section explains the operation of all **MS2000/MS2000R** parameters and discusses points of which you should be aware for various settings. The explanations are organized by page for each mode.

Refer to this section when an unfamiliar parameter appears, or when you would like to learn more about the functions.

Appendices

This section provides explanations of MIDI-related topics such as the MIDI messages that the **MS2000/MS2000R** can use (control changes etc.), as well as a Voice Name List and other information.

Printing conventions in this manual

Knobs and keys [ ]

Knobs and keys on the panel of the **MS2000/MS2000R** are enclosed in square brackets [ ].

Parameters shown in the LCD screen " "

Parameters that appear in the LCD screen are enclosed in double quotation marks " ".

Bold type

Parameter values are printed in bold type.
The names of parts of the **MS2000/MS2000R** and operating procedures are also printed in bold type.

Procedure steps ○, ①, ②, ③ . . .

Steps in a procedure are printed as ○ or ①, ②, ③ . . .

☞p.■

This indicates a page to which you can refer.

Symbols , note

These symbols respectively indicate points of caution and words of advice.

Display screen

The values of parameters appearing in the display screens printed in this manual are only explanatory examples. They will not necessarily match the values shown in the LCD screen of your instrument.

MIDI-related explanations

CC# is used as an abbreviation for Control Change Number.
In MIDI-related explanations, **numbers enclosed in square brackets [ ]** are in hexadecimal notation.

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Basic Guide

Basic Guide

Introduction

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Introduction

Main features

1. Analog modeling system

The **MS2000/MS2000R** provides eight types of oscillator algorithms, including waveforms of analog synthesizers, and places the most important sound parameters on the front panel so that you can modify sounds as you play or perform a variety of realtime editing, with the same ease of operation as on an analog synthesizer.

2. 128 programs

The **MS2000/MS2000R** contains a total of **128** programs, with **16** each in banks A–H.

3. Virtual Patch function

Not only EG and LFO, but also velocity and keyboard tracking can be used as modulation sources, and assigned to parameters that make up the sound, giving you even more freedom to create sounds.

4. MOD SEQUENCE

MOD SEQUENCE is a step sequencer that lets you apply time-varying change to sound parameters in a way similar to analog synthesizers of the past.

5. External input waveforms can be processed

A waveform input from the AUDIO IN 1, 2 jacks can be processed in the same way as the internal waveforms.

6. Vocoder function

If a mic is connected to the AUDIO IN 2 jack, the **MS2000/MS2000R** can be used as a four voice vocoder.
In addition to using two 16-bank filter sets to simulate the vocoder sounds of classic equipment, you can create original vocoder sounds by shifting the filter frequency, or adjusting the level and pan of individual frequency bands.

7. Arpeggiator

The **MS2000/MS2000R** provides an arpeggiator that allows you to produce arpeggios simply by holding down a chord. You can choose from six arpeggio types, and also specify the duration and spacing of the arpeggiated notes.

The structure of the MS2000/MS2000R

Modes

The **MS2000/MS2000R** has the following three modes.

Program Play mode

In this mode you can select and play a program (sound). As you play, you can use the front panel knobs and keys to modify the sound and change the parameter values.
You can also use the arpeggiator and MOD SEQUENCE for additional performance possibilities.

LCD Edit mode

In this mode you can view parameter values in the LCD screen and edit them.
Access this mode when you wish to edit parameters that do not correspond to any knob or key on the front panel, or when you wish to make detailed adjustments to a parameter value.

Global mode

In Global mode you can make the following settings.

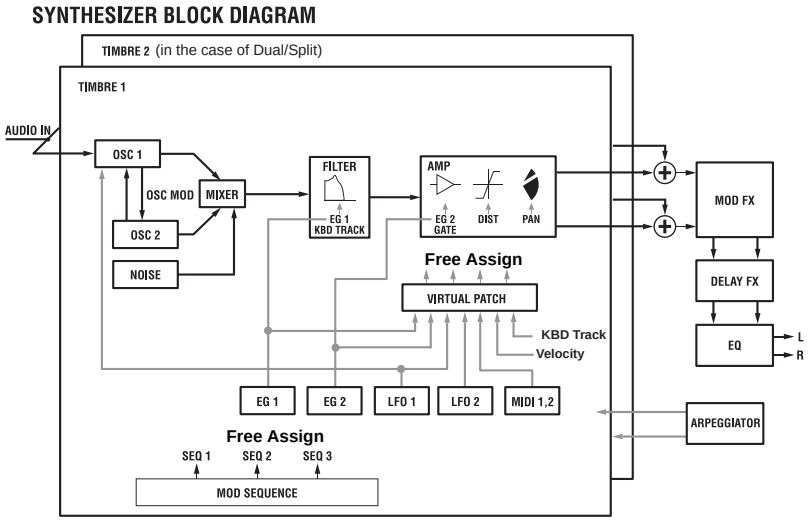
- Adjust the tuning and edit user scale data
- Specify the functions of the assignable pedal and assignable switch
- Transmit a MIDI exclusive data dump
- Set MIDI and other parameters for the entire the **MS2000/MS2000R**

How a program is structured

The programs of the **MS2000/MS2000R** can be classified in one of two categories depending on the Voice mode setting (LCD Edit mode Page 01A: COMMON "Mode"): synth programs whose "Mode" is **Single/Dual/Split**, and vocoder programs whose "Mode" is **Vocoder**.

Synth programs

As shown in the diagram below, a synth program consists of timbres, effects, and an arpeggiator.



TIMBRE 1/2

A timbre consists of OSC1/OSC2/NOISE, MIXER, FILTER, AMP, EG, LFO, VIRTUAL PATCH, and MOD SEQUENCE. If the voice mode is **Single**, only TIMBRE 1 will sound. If the voice mode is **Dual** or **Split**, both timbres TIMBRE 1 and TIMBRE 2 will sound.

OSC1/OSC2/NOISE

OSC1 (Oscillator 1) allows you to select from eight different oscillator algorithms, including basic analog synthesizer waveforms such as **SAW** and **PWM**, **Cross Modulation**, and the **DWGS (Digital Waveform Generator System)** used on the Korg DW-8000 synthesizer.
A waveform input from the AUDIO IN 1/2 jacks can also be processed.

OSC2 (Oscillator 2) allows you to select from three types: **SAW**, **SQU**, and **TRI**. It can also be used as a modulator oscillator for the **Sync** or **Ring modulation** characteristic of analog synthesizers.

NOISE (Noise Generator) produces white noise. This can be used for sound effects, etc.

MIXER

Here you can adjust the levels of OSC1, OSC2 and NOISE, and send the combined signal to the FILTER.

FILTER

The FILTER cuts or emphasizes frequency components of the signal from the oscillator, thus adjusting the tone (brightness, etc.). These filter settings will significantly affect the sound.
You can select from four types of filter: –12 or –24 dB/oct LPF (Low Pass Filter), –12 dB/oct BPF (Band Pass Filter), or –12 dB/oct HPF (High Pass Filter).
Use EG1 to create time-variant changes in cutoff frequency.

AMP

This consists of AMP (Amplifier), DIST (Distortion), and PAN (Panpot).

AMP sets the volume, and PAN sets the stereo location.

Use EG2 to create time-variant changes in volume.

You can produce hard\harsh tones by turning DIST on. By adjusting the filter cutoff and resonance, strong effects can be produced.

EG1/2

An EG (Envelope Generator) applies a time-variant change to a sound parameter.

On the **MS2000/MS2000R**, there are two EG's for each timbre. Each EG consists of four parameters: ATTACK (attack time), DECAY (decay time), SUSTAIN (sustain level), and RELEASE (release time).

EG1 is assigned as the envelope source that produces time-variant change in the FILTER cutoff frequency.

EG2 is assigned as the envelope source that produces time-variant change in the AMP volume.

If you wish to assign EG1 and EG2 to other parameters, you can make VIRTUAL PATCH settings to do so.

LFO 1/2

The LFO (Low Frequency Oscillator) applies cyclic change to sound parameters.

The **MS2000/MS2000R** provides two LFO's for each timbre, each with four waveforms.

LFO1 is assigned as the modulation source for OSC1.

LFO2 is assigned as the modulation source for the pitch modulation controlled by the modulation wheel.

If you wish to assign LFO1 and LFO2 to other parameters, you can make VIRTUAL PATCH settings to do so.

VIRTUAL PATCH

VIRTUAL PATCH allows you to use not only EG or LFO, but even velocity (keyboard playing dynamics) or keyboard tracking (the area of the keyboard you play) as modulation sources which can be assigned to sound parameters for greater freedom in creating sounds. Four routings (combinations) can be specified for each timbre.

MOD SEQUENCE

MOD SEQUENCE is a step sequencer that lets you apply time-variant change to various sound parameters in a way similar to analog synthesizers of the past.

Use the sixteen knobs on the front panel to set the value of each step, and playback to make the sound change.

You can also operate the knobs in realtime, and record their movements (parameter values) in each step (**Motion Rec function**).

Since each timbre can have up to three sequences, you can obtain very complex tonal changes.

EFFECTS

Each program has a modulation effect, delay, and equalizer.

For a modulation-type effect, you can select from three effects such as chorus.

For a delay effect, you can select from three types of delay, including a stereo delay.

ARPEGGIATOR

This is an arpeggiator with six types of arpeggio type.

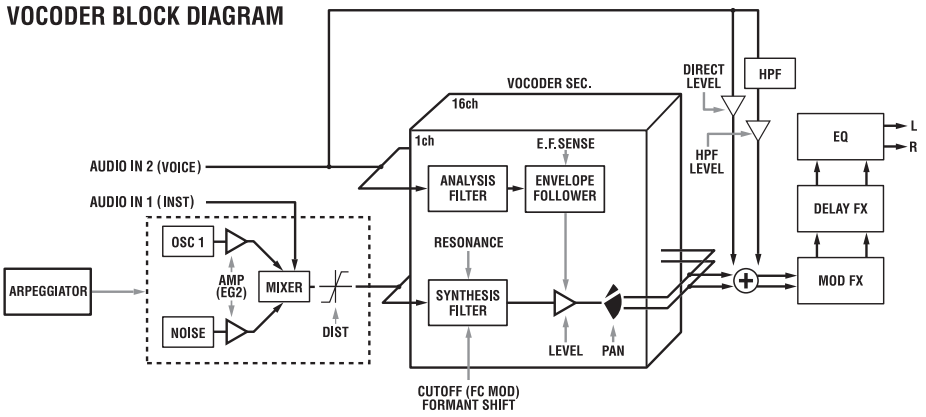
For a program whose voice mode is **Dual/Split**, arpeggios can be played on one or both timbres.

Since arpeggiator settings can be made for each program, you can create and save an arpeggio type that is suitable for the sound of that program.

Vocoder programs

Vocoder programs consist of OSC1/NOISE, MIXER, VOCODER SEC., EFFECT, and ARPEGGIATOR. The vocoder takes a signal from the internal tone generator (OSC1/NOISE) or the AUDIO IN 1 jack, applies to it the characteristics of the signal that is input from the AUDIO IN 2 jack, and outputs the result. The most popular use for this is to input a voice from a mic connected to the AUDIO IN 2 jack, in order to create the effect of an instrument speaking.

VOCODER BLOCK DIAGRAM



OSC1/NOISE/AUDIO IN 1 jack (carrier)

The OSC1/NOISE signal will be the carrier to which the vocoder effect is applied. Waveforms that contain large numbers of overtones such as **SAW** and **VOX WAVE** are ideal for the carrier waveform.

It is also possible to apply the vocoder effect to a waveform that is input to the AUDIO IN 1 jack together with OSC1/NOISE.

The volumes of OSC1/NOISE/AUDIO IN are adjusted by the MIXER, and the combined signal is output to the VOCODER SEC.

AUDIO IN 2 jack (modulator)

The signal that is input to the AUDIO IN 2 jack will be the modulator. In general, it is most common for a voice to be input to the modulator, but you can create unique effects by inputting rhythm sounds or other waveforms.

VOCODER SEC.

This consists of two sets of 16 band-pass filters (ANALYSIS FILTER and SYNTHESIS FILTER) and the ENVELOPE FOLLOWER.

The audio signal from the AUDIO IN 2 jack (modulator) is input to sixteen bandpass filters (ANALYSIS FILTER), and the ENVELOPE FOLLOWER detects the volume envelope (time-variant change) of each frequency band.

Then, the signal from the internal tone generator or the AUDIO IN 1 jack (carrier) is input to the other set of 16 band-pass filters (SYNTHESIS FILTER), and processed by the envelopes detected by the ENVELOPE FOLLOWER to modulate the carrier with the features of the voice, producing the impression that the instrument or sound is talking (vocoder effect).

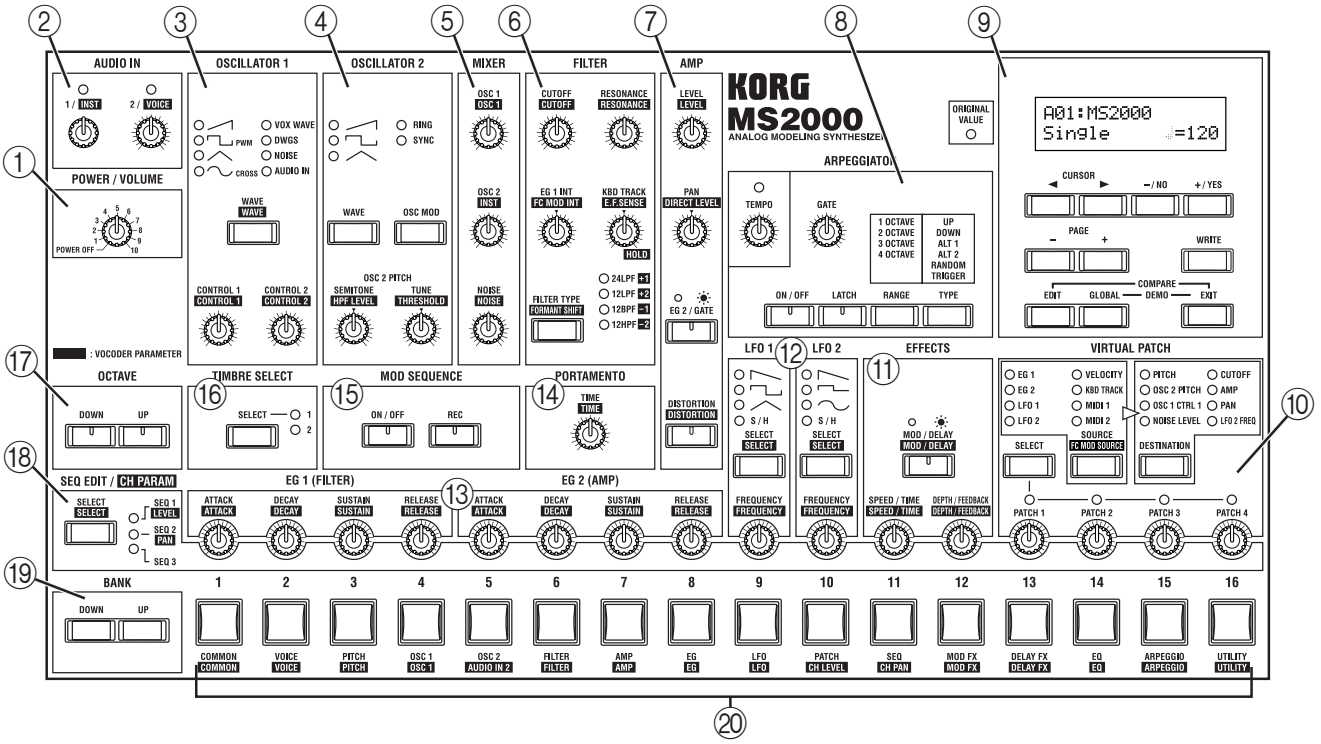
It is also possible to use the FORMANT SHIFT or CUTOFF parameters to change each frequency of the carrier band-pass filter. This will cause the frequency response curve to be raised or lowered while preserving the character of the modulator, and will dramatically affect the tone.

Front and rear panel

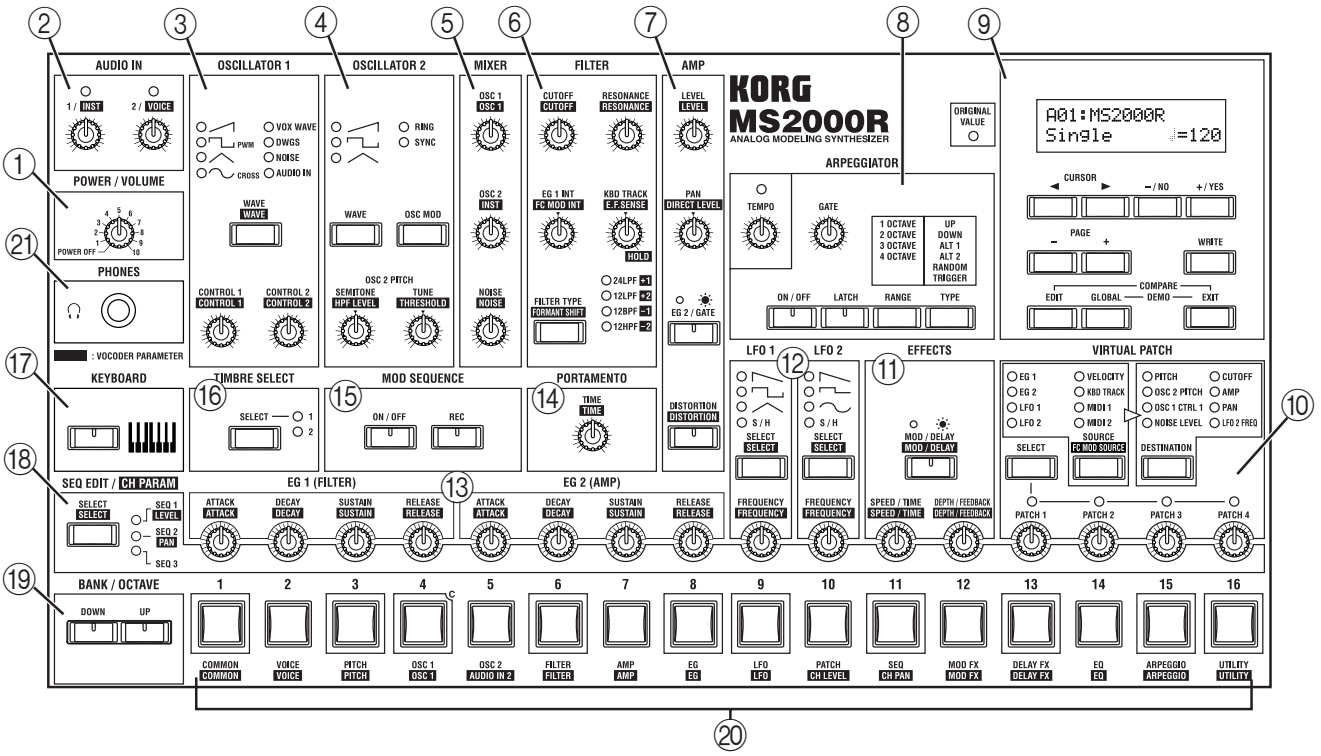
Front panel

The characters printed inverse white on the front panel are vocoder program parameters (LCD Edit mode Page 01A: COMMON "Mode" = **Vocoder**).

MS2000



MS2000R



① POWER/VOLUME

[POWER/VOLUME] knob
This turns the power on/off and adjusts the volume.

② AUDIO IN

[1/ INST] knob
This adjusts the input level of the AUDIO IN 1 jack.

[2/ VOICE] knob
This adjusts the input level of the AUDIO IN 2 jack.

③ OSCILLATOR 1

[WAVE• WAVE] key
This selects the waveform for oscillator 1.
The LED for the selected waveform will light.

[CONTROL 1• CONTROL 1] knob
This adjusts a waveform parameter.
The parameter will depend on the selected waveform.

[CONTROL 2• CONTROL 2] knob
This adjusts a waveform parameter.
The parameter will depend on the selected waveform.

④ OSCILLATOR 2

[WAVE] key
This selects the waveform for oscillator 2.
The LED for the selected waveform will light.

[OSC MOD] key
This selects how the oscillator 2 will modulate by oscillator 1. The modulated waveform will be output from oscillator 2.

[SEMITONE• HPF LEVEL] knob
For **synth programs**, this sets the pitch of oscillator 2 in semitone steps.
For **vocoder programs**, this sets the output level of the HPF (high pass filter) that is applied to the signal received at the AUDIO IN 2 jack.

[TUNE• THRESHOLD]knob
For **synth programs**, this is a fine adjustment for the pitch of oscillator 2.
For **vocoder programs**, this sets the threshold level at which the signal input from the AUDIO IN 2 jack will be cut.

⑤ MIXER

[OSC1• OSC 1] knob
This adjusts the volume of oscillator 1.

[OSC2• INST] knob
For **synth programs**, this adjusts the volume of oscillator 2.
For **vocoder programs**, this adjusts the volume of the signal that is input from the AUDIO IN 1 jack.

[NOISE• NOISE] knob
This adjusts the volume of the noise generator.

⑥ FILTER

[FILTER TYPE• FORMANT SHIFT] key
For **synth programs**, this selects the filter type.
The LED for the selected filter type will light.
For **vocoder programs**, this selects the formant shift.
The LED for the selected formant shift will light.

[CUTOFF• CUTOFF] knob
For **synth programs**, this sets the filter cutoff frequency.
For **vocoder programs**, this sets the cutoff frequency of the synthesis filter.

[RESONANCE• RESONANCE] knob
For **synth programs**, this sets the amount of filter resonance.
For **vocoder programs**, this sets the amount of resonance for the synthesis filter.

[EG1 INT• FC MOD INT] knob
For **synth programs**, this adjusts how much the filter cutoff frequency will be affected by the time-variant change produced by EG1.
For **vocoder programs**, this adjusts the depth of the modulation that is applied to the cutoff frequency of the synthesis filter. The modulation source can be selected by FC MOD SOURCE .

[KBD TRACK• E.F.SENSE] knob
For **synth programs**, this adjusts the filter keyboard tracking (change in cutoff frequency that will occur according to the keyboard location you play).
For **vocoder programs**, this adjusts the sensitivity of the ENVELOPE FOLLOWER for the vocoder sec.

⑦ AMP

[LEVEL• LEVEL] knob
For **synth programs**, this adjusts the volume of each timbre.
For **vocoder programs**, this adjusts the volume of the internal tone generator carrier (OSC1/NOISE).

[PAN• DIRECT LEVEL] knob
For **synth programs**, this sets the output panning for each timbre.
For **vocoder programs**, this sets the level at which the signal from the AUDIO IN 2 jack will be output directly.

[EG 2/GATE] key
This selects the envelope source for the volume.

[DISTORTION• DISTORTION] key
This switches distortion on/off.

⑧ ARPEGGIATOR

[TEMPO] knob
This sets the tempo of the arpeggio performance.
This setting will also determine the MOD SEQUENCE playback speed, and is used when synchronizing the LFO frequency to the tempo.

[GATE] knob
This adjusts the length of the notes sounded by the arpeggiator.

[ON/OFF] key
This turns the arpeggiator on/off.

[LATCH] key
If this is on, the arpeggiator will continue playing even if you release your hand from the keyboard.

[RANGE] key
This sets the range in which the arpeggio will be played.

[TYPE] key
This selects the arpeggio type.

⑨ KEY & DISPLAY

ORIGINAL VALUE LED
When editing, this will light when the value currently selected by the knob or key matches the written value.

LCD
In **Program Play mode**, this will display information such as the program number and program name.
In **LCD Edit and Global modes**, this will display parameters.

CURSOR [◄][►] keys
In **LCD Edit and Global modes**, these are used to select the parameter that you wish to edit.

[+/YES] [–/NO] keys
In **Program Play mode**, these are used to select programs.
In **LCD Edit and Global modes**, these are used to set values, and to write or copy data.

PAGE [+][–] keys
These are used to switch pages.

[EDIT] key
This key enters LCD Edit mode.
While you are editing a program, you can hold down this key and press the [EXIT] key to return to the original written settings (the Compare function).

[GLOBAL] key
This key enters Global mode
By holding down the [EXIT] key and then holding down this key, you can enter Demo mode.

[WRITE] key
Use this key to save the settings you edit.

[EXIT] key
From any mode, this key lets you return to Program Play mode.
It is also used to cancel a write or copy operation.

⑩ VIRTUAL PATCH

[SELECT] key
This selects the patch.

[SOURCE• FC MOD SOURCE] key
For **synth programs**, this selects the modulation source.
For **vocoder programs**, this selects the modulation source that is applied to the synthesis filter cutoff frequency.

[DESTINATION] key
This selects the parameter to which modulation will be applied.

[PATCH1], [PATCH2], [PATCH3], [PATCH4] knobs
These adjust the depth of modulation.

⑪ EFFECTS

[MOD/DELAY• MOD / DELAY] key
This selects the effect that will be edited.

[SPEED/TIME• SPEED / TIME] knob
This adjusts the modulation speed of the modulation effect or the delay time of the delay effect.

[DEPTH/FEEDBACK• DEPTH / FEEDBACK] knob
This adjusts the effect depth and the amount of feedback.

⑫ LFO1/LFO2

[SELECT• SELECT] key
This selects the LFO waveform.

[FREQUENCY• FREQUENCY] knob
This sets the LFO frequency.

⑬ EG1/EG2

[ATTACK• ATTACK] knob
This sets the attack time (rise time).

[DECAY• DECAY] knob
This sets the decay time (the time from when the attack time is completed until the sustain level is reached).

[SUSTAIN• SUSTAIN] knob
This adjusts the sustain level (the level that will be held while the note is sustained).

[RELEASE• RELEASE] knob
This sets the release time (the time from when you release the note until it decays).

⑭ PORTAMENTO

[TIME• TIME] knob
This determines how portamento will be applied.

⑮ MOD SEQUENCE

[ON/OFF] key
This switches the sequence on/off.

[REC] key
Use this when you wish to record realtime knob movements as a sequence.

⑯ TIMBRE SELECT

[SELECT] key
When editing a **Dual/Split** program, this switches between the two timbres for editing.

⑰ OCTAVE (MS2000), KEYBOARD (MS2000R)

MS2000

OCTAVE [UP], [DOWN] keys

These shift the pitch range of the keyboard in one-octave steps.

MS2000R

[KEYBOARD] key

If this key is pressed to make the LED light, you can use the SELECT [1]–[16] keys to play the program.

⑱ SEQ EDIT/ CH PARAM

[SELECT• SELECT] key

For **synth programs**, this selects a sequence when creating or editing sequence data. When a sequence is selected, use the sixteen knobs at the right to create the sequence data.

For a **vocoder program**, this is used to set the synthesis filter levels and panpot. In this case, the sixteen knobs at the right are used to set the various parameter values.

⑲ BANK (MS2000), BANK/OCTAVE (MS2000R)

MS2000

[UP], [DOWN] keys

Select the program bank.

MS2000R

[UP], [DOWN] keys

If the [KEYBOARD] key is off (LED dark), these select the program bank.

If the [KEYBOARD] key is on (LED lit), these change the pitches assigned to the SELECT [1]–[16] keys in one-octave steps.

⑳ SELECT [1]–[16] keys

In **Program Play mode**, use these to select programs.

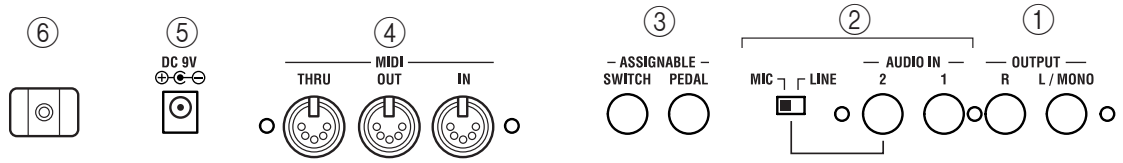
In **LCD Edit mode**, use these to select pages.

On the **MS2000R**, turning the [KEYBOARD] key on (LED lit) will cause these keys to function as a convenience MIDI keyboard, which you can use to play the program.

㉑ PHONES jack (MS2000R)

Connect a set of headphones to this jack.

Rear panel



① OUTPUT

L/MONO, R jacks

Connect these to your powered monitor speakers, stereo amp, mixer, or multitrack recorder. If you are playing in mono, make connections to the L/MONO jack.

② AUDIO IN

AUDIO IN 1 jack

For **synth programs**, connect a synthesizer or audio device here. The input signal can be used as the oscillator 1 waveform.

For **vocoder programs**, this will be the input jack for the external carrier of the vocoder.

AUDIO IN 2 jack

For **synth programs**, connect a synthesizer or audio device here. This can be used together with the AUDIO IN 1 jack as the oscillator 1 waveform.

For **vocoder programs**, connect a mic to this jack, and input the modulator audio signal.

[AUDIO IN 2 Level] switch

Set this according to the input source that is connected to the AUDIO IN 2 jack. If a mic is connected, set this to **MIC**. If a synthesizer or audio device is connected, set this to **LINE**.

③ ASSIGNABLE

SWITCH jack

Connect a switch pedal here.

PEDAL jack

Connect a volume pedal (expression pedal) here.

④ MIDI

MIDI IN connector

MIDI data is received at this connector. Connect it to an external MIDI device.

MIDI OUT connector

MIDI data is transmitted from this connector. Connect it to an external MIDI device.

MIDI THRU connector

MIDI data received at MIDI IN is re-transmitted without change from this connector. Use it when you wish to connect three or more MIDI devices.

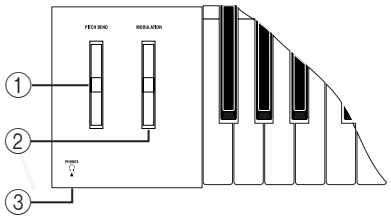
⑤ DC 9V

Connect the included AC adapter here.

⑥ Cable hook

Wrap the AC adapter power cable around this to prevent accidental disconnection.
When unwrapping the cable from the hook, do not apply excessive force to the cable.

Control panel (MS2000)



① PITCH BEND wheel

This controls the pitch.

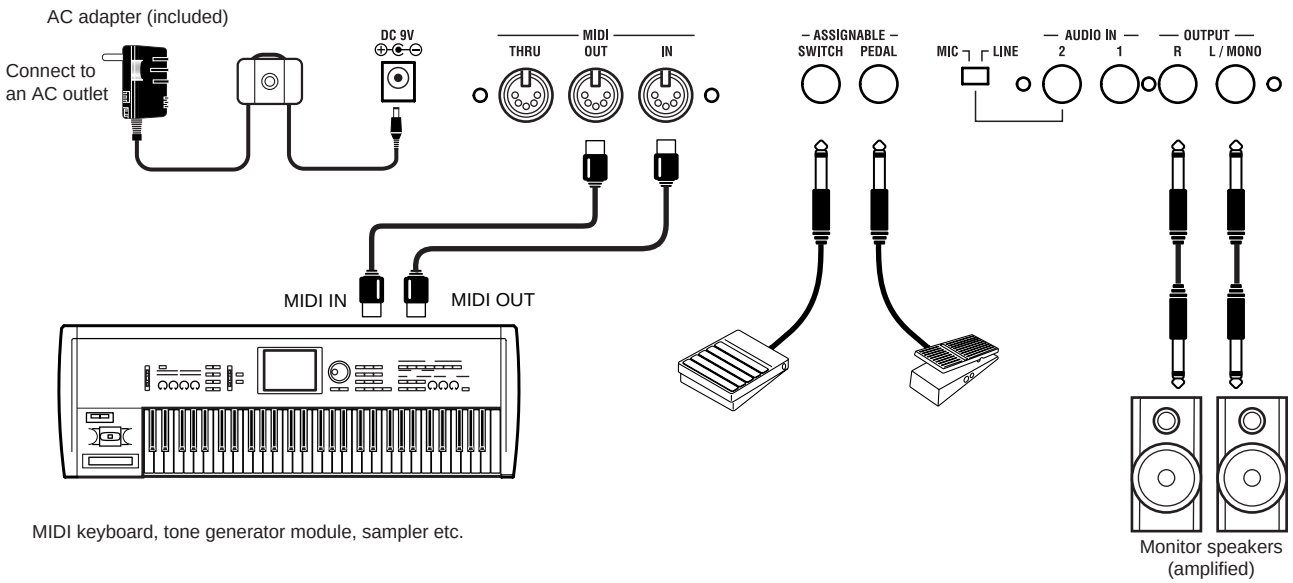
② MODULATION wheel

This controls the modulation depth.
With the factory settings, it will control the depth of the modulation applied by the LFO2 to the oscillator pitch.

③ PHONES jack

A set of headphones can be connected here.

Connections



Be sure to turn off the power of all devices before making connections. Failing to take this precaution may cause your speaker system to be damaged, or may cause malfunctions.

Connecting the AC adapter

Connect the included AC adapter.
After you have connected the AC adapter to the **MS2000/MS2000R**, plug it into an AC outlet.

Connecting external devices

Connect the OUTPUT jacks (L/MONO, R) of the **MS2000/MS2000R** to your audio system (mixer, powered monitor system etc.).
In order to take full advantage of the potential of the **MS2000/MS2000R**, we recommend that you use stereo output.
If you are making monaural connections, use the L/MONO jack.

Connecting pedals and switches

By connecting a volume pedal and a switch pedal you can expand your performance possibilities.
Connect a pedal and/or switch pedal as necessary. You can set the polarity of the pedal in Global mode Page 6: PEDAL&SW. (☞Parameter guide p.56)

a. ASSIGNABLE PEDAL jack

If you wish to use a pedal to control breath control, volume, pan, or expression, connect an EXP-2 expression pedal (sold separately) or an XVP-10 EXP/VOL pedal (sold separately) etc.
The function that will be controlled is determined by the "A.Pedal" setting in Global mode Page 6A: PEDAL&SW (☞Parameter guide p.56). With the factory settings, this is set to **Exp Pdl**.

b. ASSIGNABLE SWITCH jack

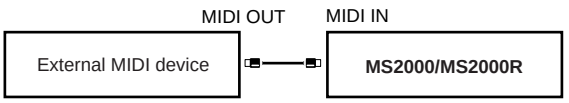
If you wish to use a pedal switch to change programs, to change the octave up/down, or to turn portamento or the arpeggiator on/off, connect a PS-1 switch pedal (sold separately) or DS-1H damper pedal (sold separately). The function that will be controlled is determined by the "A.SwFunc" setting in Global mode Page 6B: PEDAL&SW (☞Parameter guide p.56). With the factory settings, this is set to **Damper**.

Connecting MIDI devices

If you wish to connect the **MS2000/MS2000R** to an external MIDI device, use a MIDI cable to make connections.

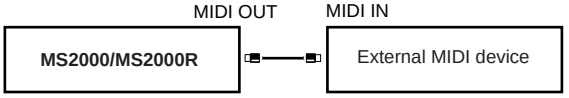
1. Using the MS2000/MS2000R as a tone generator module

To use the **MS2000/MS2000R** as a tone generator module, use a MIDI cable to connect the **MS2000/MS2000R**'s MIDI IN connector to the MIDI OUT of the external MIDI device.



2. Playing an external MIDI device

If you wish to play an external MIDI device from the keyboard of the **MS2000** or from the SELECT [1]–[16] keys of the **MS2000R**, use a MIDI cable to connect the MIDI OUT connector of the **MS2000/MS2000R** to the MIDI IN connector of the external MIDI device.



3. Setting the MIDI channel (preparations for playing)

If you are using the **MS2000/MS2000R** as a tone generator module, or if you are using the **MS2000** as a master keyboard to play an external MIDI device, you must set the MIDI channel of the **MS2000/MS2000R** to match the MIDI channel of the external MIDI device before you can begin playing.

Use the following procedure to set the MIDI channel.

a. Check the connections

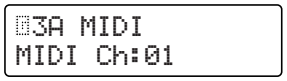
○ **Make sure that the MS2000/MS2000R is correctly connected to the external MIDI device (☞p.10).**

b. Set the MIDI channel of the MS2000/MS2000R

The Global MIDI channel of the **MS2000/MS2000R** is set in Global mode Page 3A: MIDI "MIDI Ch."

① **Press the [GLOBAL] key.**
You will enter Global mode.

② **Press the SELECT [5] key.**
Page 3A: MIDI "MIDI Ch" will appear in the LCD screen.



With the factory settings, the global MIDI channel is set to **1**.

③ **Use the [+/YES] [–/NO] keys to set the MIDI channel.**

④ **Press the [EXIT] key to return to Program Play mode.**

c. Set the MIDI channel of the connected device

Set the MIDI channel of the connected external MIDI device to match the MIDI channel you set for the **MS2000/MS2000R**.

For the procedure, refer to the owner's manual of the connected device.

Global parameters that you edit will return to their unedited setting if you turn off the power without saving. To save your edits, you must perform the Write operation. (☞p.30)

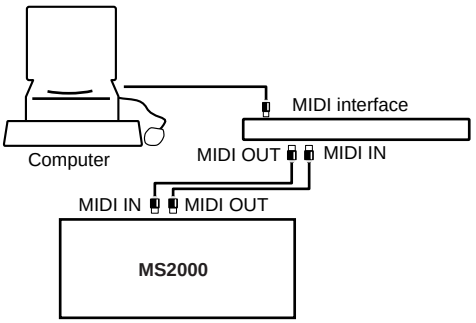
Connections to the AUDIO IN jacks

If you wish to modify the sound of an external synthesizer, sampler or other audio source or want use the **MS2000/MS2000R** as a vocoder, connect your equipment to the AUDIO IN jack(s).
For details on connections and settings, refer to the Basic Guide section entitled "Using external input" (☞p.17).

Connections to a computer/sequencer

1. Connecting the MS2000 to a computer/sequencer

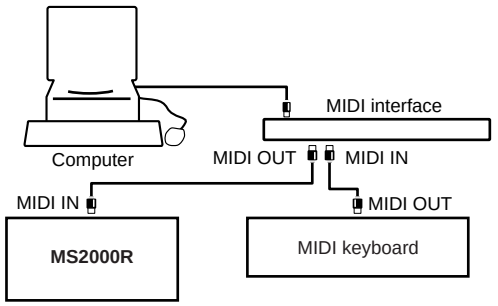
If you wish to perform on the **MS2000** keyboard, record your performance on a computer or sequencer, and then play back the performance on the **MS2000** (i.e., using the **MS2000** as both a MIDI keyboard for input and as a MIDI tone generator), connect the **MS2000** to your computer/sequencer using a MIDI interface as shown below.



If the echo back setting of the sequencer is turned on, duplicate notes will be sounded when you play the **MS2000** keyboard. To prevent this, turn the Global mode Page 3B: MIDI "Local" setting **OFF** to break the connection inside the **MS2000**.
However, be aware that if "Local" is **OFF**, it will not be possible to play the **MS2000** by itself.

2. Connecting the MS2000R to a computer/sequencer

If you wish to connect the **MS2000R** to a computer/sequencer, use a MIDI interface to connect the **MS2000R**, master keyboard, and computer as shown below.



In order to connect to your computer, you will need a MIDI interface. Please purchase an interface suitable for your computer. For details on connections between your computer and MIDI interface, and on MIDI port settings, refer to the owner's manual for your MIDI interface.

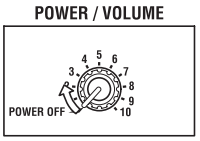
Playing

Turning the power on/off and adjusting the volume

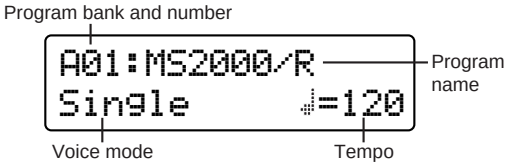
a. Turn on the power

Before turning on the power of the **MS2000/MS2000R**, turn off the power of the connected devices.

① **Rotate the [POWER/VOLUME] knob to turn on the power.**



The Program Play mode screen will appear.
When the power is first turned on, you will always be in Program Play mode.
The upper line of the LCD will show the bank, number, and name of the program. The lower line will show the voice mode of the program, and the tempo.

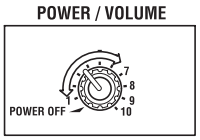


② **Turn on the power of the connected devices.**

b. Adjust the volume

○ **Rotate the [POWER/VOLUME] knob to an appropriate level.**

The headphone volume is also adjusted by this knob.

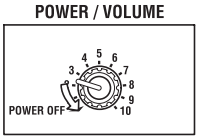


c. Turn off the power

① **Turn off the power of the connected devices.**

② **Rotate the [POWER/VOLUME] knob all the way to the left.**

Rotate it until it clicks off.
The power of the **MS2000/MS2000R** will be off.



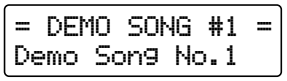
Listen to the demo performance

The **MS2000/MS2000R** contains several demo songs. Listen to the demo songs to hear the rich sounds and their expressive potential.

a. Play back the demo songs

○ **Hold down the [EXIT] key and the [GLOBAL] key for approximately one second.**

Hold down the [EXIT] key, and then press and hold the [GLOBAL] key.
The demo songs will begin playing consecutively, starting with the first song.
The LCD screen will show the song name.



b. Select a demo song

○ **During playback, use the [+/YES] [–/NO] keys.**

The demo song will change.
The LCD screen will indicate the name of the selected demo song.

c. Exit the demo performance

○ **Press the [EXIT] key.**

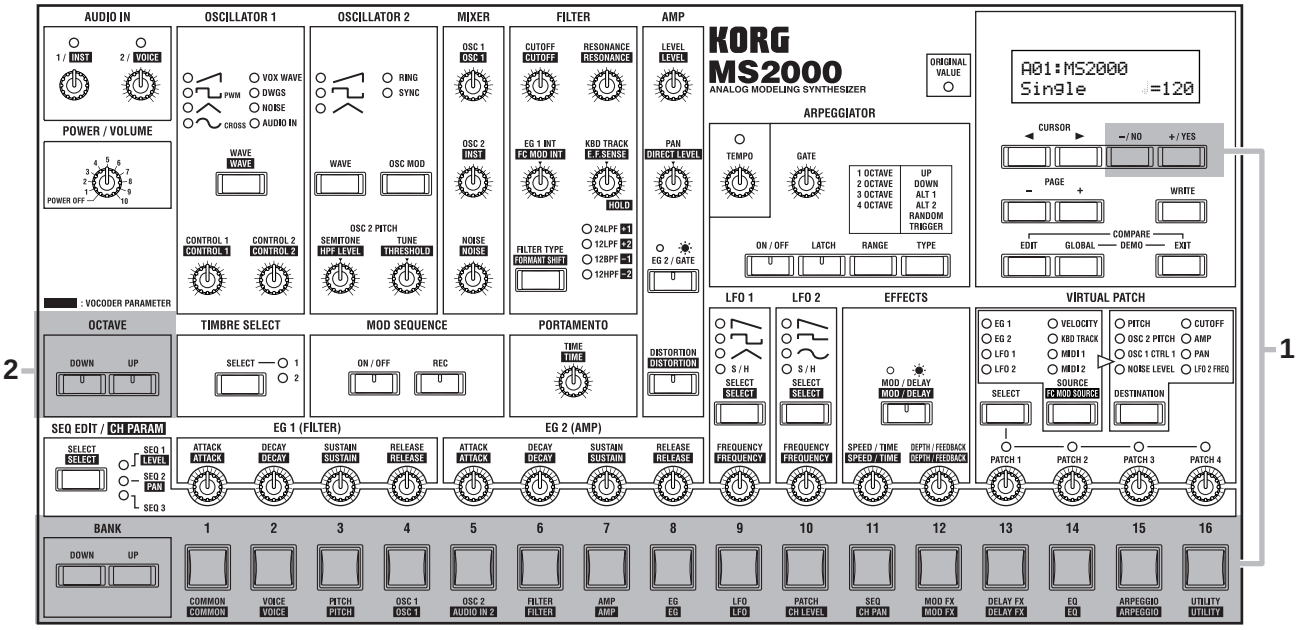
You will return to Program Play mode.

All demo songs: © 2000 korg Inc. — all rights reserved.

Playing a program

Here's how to select and play a program.
The **MS2000/MS2000R** contain a total of 128 programs, with 16 programs in each of eight banks (A–H).
You can select programs in Program Play mode. If the LCD screen shows that you are in LCD Edit mode or Global mode, press the [EXIT] key.
The method of changing the program or pitch differs between the **MS2000** and the **MS2000R**. Also, the SELECT [1]–[16] keys can be used to play a program only on the **MS2000R**.

MS2000



1. Select a program

There are two ways to select a program.

a. Using the BANK [UP] [DOWN] keys and the SELECT [1]–[16] keys

This method lets you directly select the desired program.

① **Use the BANK [UP] [DOWN] keys to select the desired program bank.**

Pressing these keys will switch between banks A–H. The selected bank will be shown in the LCD screen.

② **Use the SELECT [1]–[16] keys to select the desired program number.**

The numbers above each key correspond to the program number.

b. Using the [+/YES] [–/NO] keys

○ **Press the [+/YES] key.**

Each time you press the key, the program number will increase by one.

○ **Press the [–/NO] key.**

Each time you press the key, the program number will decrease by one.

2. Changing the pitch sounded by the keyboard in one-octave steps

The pitch assigned to the keyboard can be changed over a range of ±2 octaves.

a. Raising the pitch

○ **Press the OCTAVE [UP] key.**

Pressing the key once will make the key LED light green, and the pitch will be one octave higher.
Pressing the key twice will make the key LED light red, and the pitch will be two octaves higher.
To return to the original pitch, press the [DOWN] key.

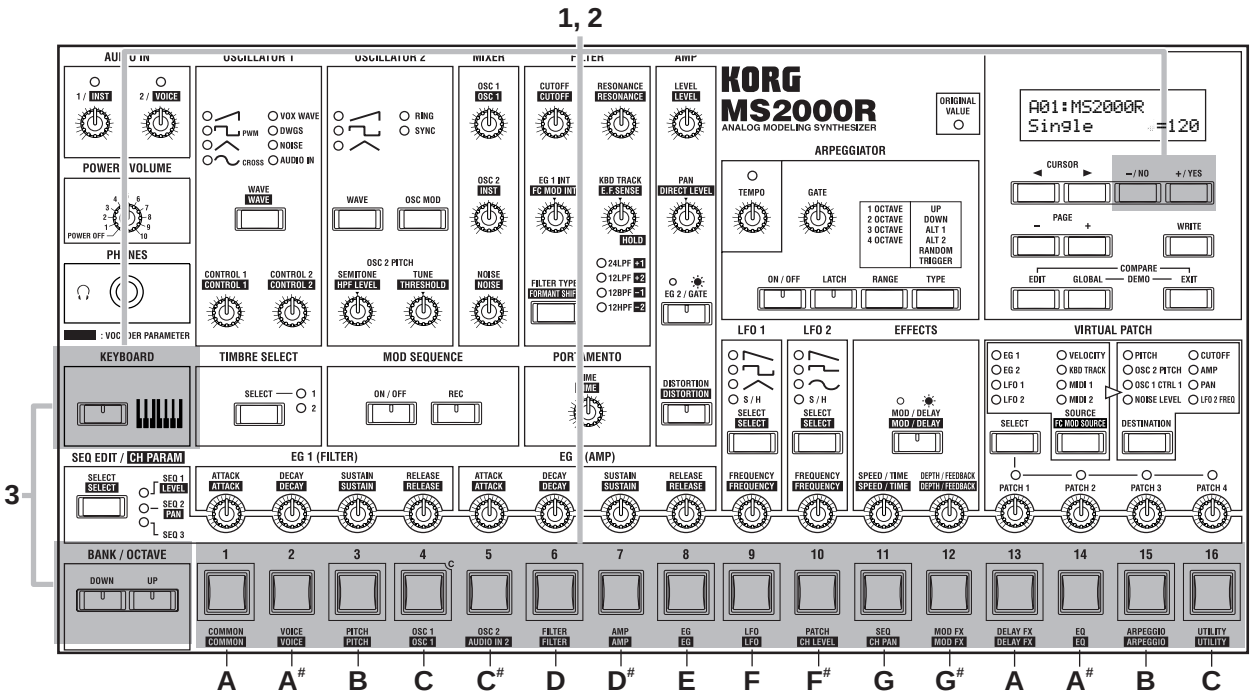
b. Lowering the pitch

○ **Press the OCTAVE [DOWN] key.**

Pressing the key once will make the key LED light green, and the pitch will be one octave lower.
Pressing the key twice will make the key LED light red, and the pitch will be two octaves lower.
To return to the original pitch, press the [UP] key.

note The setting of the BANK/OCTAVE [UP][DOWN] keys cannot be saved for individual programs. If you wish to change the pitch for a specific program, use the LCD Edit mode Page 04A: PITCH "Transpose" parameter. (☞Parameter guide p.36, Page 04A: PITCH "Transpose")

MS2000R



1. Selecting a program

There are two ways to select a program.

a. Using the BANK/OCTAVE [UP] [DOWN] keys and the SELECT [1]–[16] keys

This method lets you directly select the desired program.

① **Press the [KEYBOARD] key to make the key LED go dark.**

② **Use the BANK/OCTAVE [UP] [DOWN] keys to select the desired program bank.**

Pressing these keys will switch between banks A–H. The selected bank will be shown in the LCD screen.

③ **Use the SELECT [1]–[16] keys to select the desired program number.**

The numbers above each key correspond to the program number.

b. Using the [+/YES] [–/NO] keys

○ **Press the [+/YES] key.**

Each time you press the key, the program number will increase by one.

○ **Press the [–/NO] key.**

Each time you press the key, the program number will decrease by one.

2. Use the SELECT [1]–[16] keys to play the program

On the **MS2000R**, you can use the SELECT [1]–[16] keys to play the program.

① **Press the [KEYBOARD] key to make the key LED light.**

② **Press the SELECT [1]–[16] keys.**

The program will sound. The correspondence between the SELECT [1]–[16] keys and their pitches is shown in the illustration above.

3. Changing the pitch sounded by the keys in one-octave steps

The pitch assigned to the SELECT [1]–[16] keys can be changed over a range of ±2 octaves.

This setting has no effect on the pitches that will be generated by a MIDI keyboard or other external MIDI devices that are connected to the **MS2000R**.

○ **Before you begin, press the [KEYBOARD] key to make the key LED light.**

a. Raising the pitch

○ **Press the BANK/OCTAVE [UP] key.**

Pressing the key once will make the key LED light green, and the pitch will be one octave higher.
Pressing the key twice will make the key LED light red, and the pitch will be two octaves higher.
To return to the original pitch, press the [DOWN] key.

b. Lowering the pitch

○ **Press the BANK/OCTAVE [DOWN] key.**

Pressing the key once will make the key LED light green, and the pitch will be one octave lower.
Pressing the key twice will make the key LED light red, and the pitch will be two octaves lower.
To return to the original pitch, press the [UP] key.

note The setting of the BANK/OCTAVE [UP][DOWN] keys cannot be saved for individual programs. If you wish to change the pitch for a specific program, use the LCD Edit mode Page 04A: PITCH "Transpose" parameter. (☞Parameter guide p.36, Page 04A: PITCH "Transpose")

Playing arpeggios

The **MS2000/MS2000R** contain a built-in arpeggiator that sounds an arpeggiated (broken) chord when you hold down a chord on the keyboard.

When you hold down a chord on the keyboard, it will be sounded as shown at right (Arpeggio Type: Up)

1. Play a program in which the arpeggiator is turned on

Some of the factory preset programs have the arpeggiator turned on. Here's how to select and play one of these programs.

① **Select a program for which the ARPEGGIATOR [ON/OFF] key is lit.**

Programs for which the [ON/OFF] key is lit have the arpeggiator turned on. The arpeggio type and other settings will be appropriate for the sound of the program.

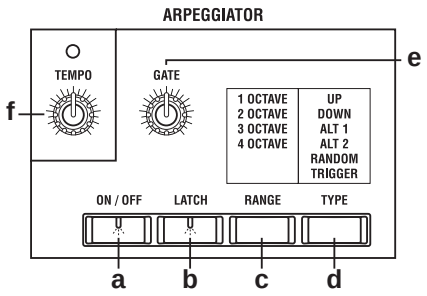
② **Hold down a chord on the keyboard.**

An arpeggio will begin playing.

note On the **MS2000R** if you press the [KEYBOARD] key to make the key LED light, you will be able to use the SELECT [1]–[16] keys to play arpeggios (☞p.14 "2. Use the SELECT [1]–[16] keys to play the program").

2. Using the knobs and keys to modify the settings

You can use the front panel knobs and keys to modify the arpeggiator settings.



a. Turning the arpeggiator on (off)

○ **Press the ARPEGGIATOR [ON/OFF] key.**

When the [ON/OFF] key is lit, the arpeggiator is on. When it is dark, the arpeggiator is off.
Each time you press the key, the setting will alternate between on and off.

b. Maintaining the arpeggiator after you release your hand from the keyboard

○ **Press the [LATCH] key to make the key LED light (LATCH is on).**

When LATCH is on, the arpeggiator will continue playing even after you release your hand from the keyboard.
Each time you press the key, the setting will alternate between on and off.

c. Setting the pitch range of the arpeggio

① **Press the [RANGE] key.**

The pitch range will be displayed in the lower line of the LCD screen.
Each time you press the key, the pitch range will change between 1–4 octaves.

```
A01:MS2000/R
Range:  1 Octave
```

② **Press the [EXIT] key.**

The previous LCD screen will reappear.

d. Selecting the arpeggio type

① **Press the [TYPE] key.**

The lower line of the LCD screen will show the arpeggio type.
Each time you press the key, the arpeggio type will change.

```
A01:MS2000/R
Type:   Up
```

② **Press the [EXIT] key.**

The previous LCD screen will reappear.

e. Adjusting the note length (gate time)

○ **Rotate the [GATE] knob.**

Rotating the knob toward the right will lengthen the notes, and rotating it toward the left will shorten them.

f. Adjusting the arpeggiator playback speed

○ **Rotate the [TEMPO] knob.**

Rotating the knob toward the right will speed up the playback speed, and rotating it toward the left will slow down the playback speed.
The selected speed will be shown in the lower left of the LCD screen.

```
A01:MS2000/R
Single      ♩=120
```

The LED located above the [TEMPO] knob will blink at quarter note intervals of the **MS2000/MS2000R**'s internal clock.

note The playback speed of the arpeggiator can be synchronized to an external MIDI device. (☞Parameter Guide p.54, Global parameter Page 3C: MIDI "Clock")

g. Other arpeggiator-related settings

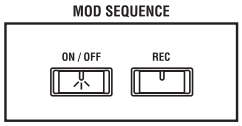
The arpeggiator also allows you to set the "Key Sync," "Resolution," and "Swing." For details on these parameters, refer to p.27 of the Basic Guide, Editing section "Editing arpeggio parameters," and Parameter Guide p.45, Program parameters "■ ARPEGGIATOR."

Using MOD SEQUENCE to modify the sound

1. Playing a program in which MOD SEQUENCE is on

Some of the factory preset programs contain sequence data. Here's how to select and play these programs.

① **Select a program whose MOD SEQUENCE [ON/OFF] key is lit.**



Programs whose MOD SEQUENCE [ON/OFF] key is lit contain sequence data.

For some programs, both the sequence and the arpeggiator will be on, but for this example we recommend that you select a program in which only the sequence is on.

② **Play the keyboard.**

The program will sound, and the sequence will begin playing to modify the sound.
The **SELECT [1]–[16] keys** will light consecutively to indicate the step that is currently playing.

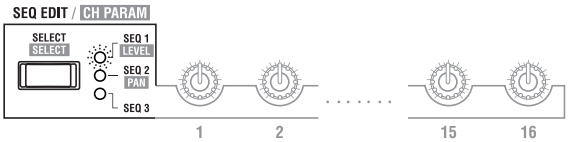
③ **Rotate the [TEMPO] knob.**

The speed at which the sound is modified will change.

2. Checking the parameter that is assigned to each sequence

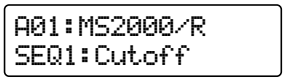
Here's how to check the parameter that is assigned to each sequence.

○ **Press the SEQ EDIT [SELECT] key to select a sequence (SEQ 1–3).**



The LED of the selected sequence will light, and the assigned parameter will be displayed in the LCD screen.

If "Cutoff" is assigned to SEQ1

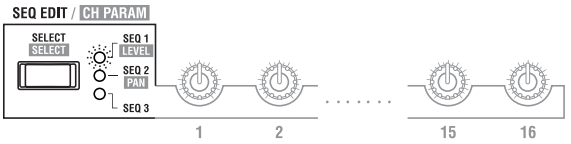


If all LED's are dark, no sequence is selected (sequence select is off). In this case, the voice mode and tempo of the program will be displayed.
In Program Play mode, you can only check the assigned parameters. To assign a parameter, use LCD Edit mode (☞Basic Guide p.25, Edit section "b. Specify sequence data for each step").

3. Checking the value recorded for each step

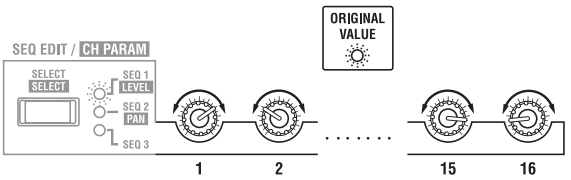
Here's you to use the sixteen knobs to check the value that is recorded for each step.

① **Press the SEQ EDIT [SELECT] key to select a sequence (SEQ 1–3).**



② **Rotate the sixteen knobs located beside the SEQ EDIT LED so that the ORIGINAL VALUE LED is lit.**

The number shown below each knob corresponds to the sequence step.
As you rotate each knob, the position where the ORIGINAL VALUE LED lights will be the value that was recorded at that step of the sequence.



The value of each step represents the change from the written or currently-set value of the parameter.

note If the SEQ EDIT [SELECT] key has selected a sequence (SEQ 1–3), you can use the sixteen knobs located beside the SEQ EDIT LED to edit the data of each step.

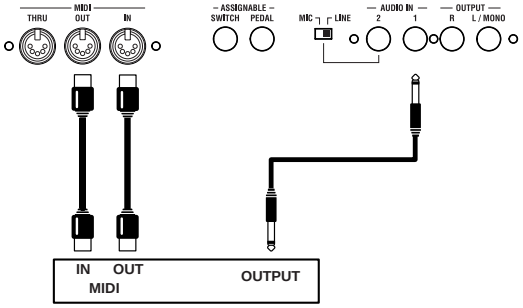
Using external input

1. Modifying an external waveform

A waveform from an external device connected to the AUDIO IN jack can be modified in the same way as an internal waveform.

Before you connect an external device, turn off the power of both devices, and set the **MS2000/MS2000R**'s AUDIO IN [1/ **INST**] knob to 0.

① **Connect the external device.**



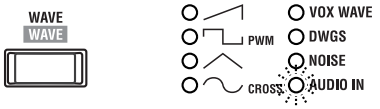
Synthesizer, sampler etc.

② **Turn on the power of both devices.**

③ **Set the MIDI channel of the MS2000/MS2000R and the MIDI channel of the connected MIDI device to the same channel.**

For details on setting the **MS2000/MS2000R**'s MIDI channel, refer to Basic Guide p.11, Connections "3. Setting the MIDI channel (preparations for playing)."

④ **Press the OSCILLATOR 1 [WAVE] key to make the AUDIO IN LED light.**



⑤ **Input a waveform from the connected external device, and adjust the AUDIO IN [1/ INST] knob so that the LED does not light red.**

⑥ **Operate the knobs and keys of the FILTER, AMP, EG, and LFO to modify the input waveform.**

For details on parameter settings, refer to Basic Guide p.20 "Editing a synth program."

Pitch-related parameters will not apply to the waveform from the AUDIO IN jack.

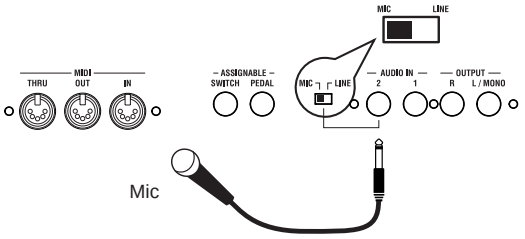
2. Using the vocoder function

Here's how to select a vocoder program (a program whose voice mode is **Vocoder**), and try out the vocoder function.

a. Using an internal waveform as the carrier

Before you connect a mic, turn off the power, and set the **MS2000/MS2000R**'s AUDIO IN [2/ **VOICE**] knob to 0.

① **Connect a mic to the AUDIO IN 2 jack.**



② **Set the rear panel [AUDIO IN 2 Level] switch to the MIC position.**

③ **Turn on the power of the MS2000/MS2000R.**

④ **Select a vocoder program.**

Programs for which the lower left of the LCD screen indicates **Vocoder** are vocoder programs.

⑤ **Input a voice from the mic, and adjust AUDIO IN [2/ VOICE] so that the LED does not light red.**

By rotating the [**DIRECT LEVEL**] knob you can directly output the voice that was input. Make adjustments while listening to the voice that is input.

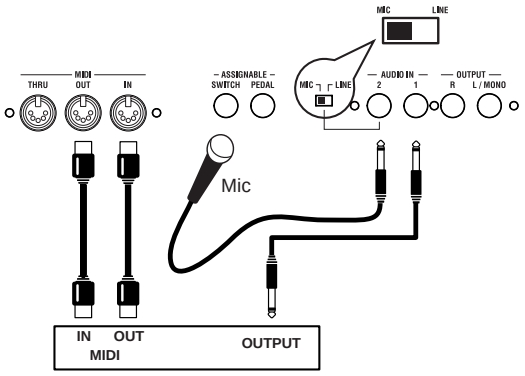
⑥ **While inputting a voice, play the keyboard.**

The sound with the vocoder effect will be output.
If you are unable to hear the effect, try adjusting the AMP [**LEVEL**] knob or the MIXER [**OSC 1**] knob.
For details on vocoder editing, refer to Basic Guide p.28, Editing section "Editing vocoder program."

b. Using an external waveform as the carrier

If you wish to use a waveform that is input from an external device as the carrier, make settings as described in both of the previous sections "1. Modifying an external waveform" and "2. Using the vocoder function."

Make connections as shown below.



Synthesizer, sampler etc.

Editing

Editing program parameters

Programs consist of a large number of parameters. In order to create a program from scratch, you will need to understand all of these parameters. Instead of this, we suggest that you select a factory preset program, and try editing it in order to understand each parameter.

Basic editing procedures

The basic procedures for editing are explained below.
You can edit a program in Program Play mode or in LCD Edit mode.

1. Editing in Program Play mode

In Program Play mode, you can not only select and play a program, but also use the front panel knobs and keys to edit the sound of the program as you play, for example by adjusting the filter cutoff or slightly slowing the attack.

The parameters that correspond to each key will change value or be switched on/off each time you press the key, and their status will be shown by the LED or in the LCD screen.

The parameters that correspond to each knob can be adjusted in "analog" fashion as indicated by the markings around the knob.

For both knobs and keys, the ORIGINAL VALUE LED will light when their setting matches the original written value.

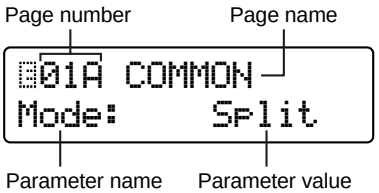
2. Editing in LCD Edit mode

Use LCD Edit mode to edit parameters for which there is no knob or key, or to edit while checking the parameter value in the LCD screen.

a. Enter LCD Edit mode

○ **Press the [EDIT] key.**

You will enter LCD Edit mode. The upper line of the LCD screen will show the page number and the page name. The lower line will show the parameter name and value.

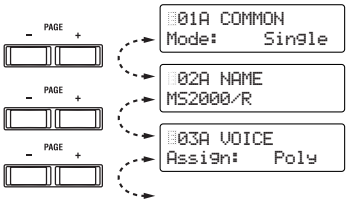


b. Select a page

LCD Edit mode consists of multiple pages. Use the PAGE [+][–] keys and the SELECT [1]–[16] keys to select pages.

○ **Press the PAGE [+] or [–] key.**

Each time you press the key, the next or previous page will appear.



○ **Press a SELECT [1]–[16] key**

You will move directly to the page of the desired parameter.
The SELECT [1]–[16] keys correspond to pages as shown below.

Key	Page
SELECT [1]	Page01A: COMMON "Mode"
SELECT [2]	Page03A: VOICE "Assign"
SELECT [3]	Page04A: PITCH "Transpose"
SELECT [4]	Page05A: OSC 1 "Wave"
SELECT [5]	Page06A: OSC 2 "Wave" (Single/Dual/Split) Page06A: AUDIO IN 2 "Gate Sense" (Vocoder)
SELECT [6]	Page08A: FILTER "Type" (Single/Dual/Split) Page08A: FILTER "Formant Shift" (Vocoder)
SELECT [7]	Page09A: AMP "Level"
SELECT [8]	Page10A: EG 1 "Attack"
SELECT [9]	Page12A: LFO 1 "Wave"
SELECT [10]	Page14A: PATCH 1 "Source: Dest" (Single/Dual/Split) Page14A: CH LEVEL "CH: Level" (Vocoder)
SELECT [11]	Page18A: SEQ COMMON "Last STEP" (Single/Dual/Split) Page15A: CH PAN "CH: Pan" (Vocoder)
SELECT [12]	Page22A: MOD FX "Type" (Single/Dual/Split) Page16A: MOD FX "Type" (Vocoder)
SELECT [13]	Page23A: DELAY FX "Type" (Single/Dual/Split) Page17A: DELAY FX "Type" (Vocoder)
SELECT [14]	Page24A: EQ "LowEQFreq" (Single/Dual/Split) Page18A: EQ "LowEQFreq" (Vocoder)
SELECT [15]	Page25A: ARPEGGIO "Type" (Single/Dual/Split) Page19A: ARPEGGIO "Type" (Vocoder)
SELECT [16]	Page26A: UTILITY "InitProgram" (Single/Dual/Split) Page20A: UTILITY "InitProgram" (Vocoder)

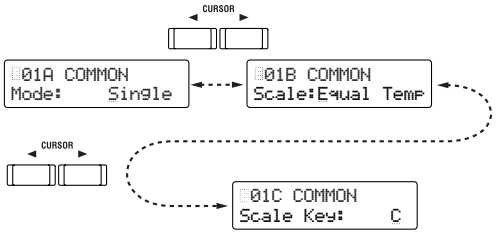
There are some pages to which the SELECT [1]–[16] keys do not correspond. To access such a page, use the SELECT [1]–[16] keys in conjunction with the PAGE [+][–] keys. For example if you wish to access Page 11A: EG 2 "Attack" in the LCD screen, press the SELECT [8] key and then press the PAGE [+] key.

c. Select a parameter

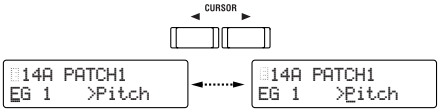
If Global mode Page 2C: Memory "Page Jump" is turned **ON**, operating a front panel knob in LCD Edit mode will cause the LCD screen to jump automatically to that parameter. (With the factory settings, this is **ON**.)

○ **Press the CURSOR [◄] or [►] key.**

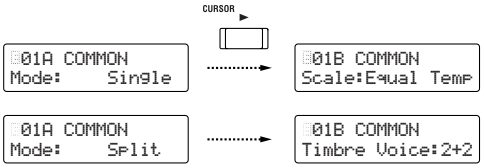
When you press the key, the parameter will change. The cursor will blink at the beginning of the parameter value.
If the parameter no longer changes when you press the CURSOR [►] key, you have reached the last parameter in that page.



If there are two parameters in a single screen, use the CURSOR[◄][►] keys to move the cursor to the parameter that you wish to modify.



In some cases, the setting of one parameter may cause the number of parameters in the page to change.
For example if the Page 01A: COMMON "Mode" parameter is set to **Split** instead of **Single**, there will be two additional parameters: "Timbre Voice" and "Split Point." In conjunction with this, the alphabetical character following the page number will also change. (In the case of **Single**, Page 01B: COMMON will be "Scale." In the case of **Split**, Page 01B: COMMON will be "Timbre Voice.")



d. Input the value

○ **Use the front panel knobs or keys, or the [+/YES] [–/NO] keys to input the value.**

Normally you will use the front panel knobs and keys.
If the parameter has no corresponding knob or key, or if you wish to edit the setting in detail, you can use the [+/YES] [–/NO] keys.
Each time you press the [+/YES] [–/NO] keys, the value will increase or decrease in steps of one.
If you hold down the [+/YES] key and press the [–/NO] key, the value will increase in steps of ten.
If you hold down the [–/NO] key and press the [+/YES] key, the value will decrease in steps of ten.

e. Return to Program Play mode

○ **Press the [EXIT] key.**

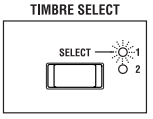
You will return to Program Play mode.

3. Switching timbres

For a program whose voice mode is **Dual/Split**, you can select the timbre that you wish to edit.

○ **Press the TIMBRE SELECT [SELECT] key.**

The LED of the selected timbre will light. Each time you press the key, the timbre will change.
The front panel knobs and keys and the parameters shown in the LCD screen will apply to the selected timbre.

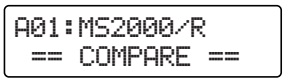


4. Returning to the state before editing (Compare)

While editing a program, you can temporarily return to the settings that were written before you edited them.

① **While holding down the [EDIT] key, press the [EXIT] key.**

The lower line of the LCD screen will indicate "COMPARE" and you will return to the state of the settings before they were edited. The upper line of the display will indicate the program number and program name.



② **Press the [EXIT] key.**

You will return to Program Play mode.

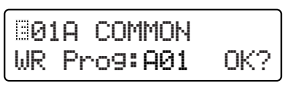
5. Writing (saving) an edited program

If you turn off the power or change to a different program without saving your edited program or arpeggiator settings, they will be lost. To save a program, you must perform the Write operation.

Before you begin the Write process, turn the Global mode Page 2A: Memory "Protect" setting **OFF** (with the factory settings this is **ON**). (☞p.30 "1. Defeat memory protect")

① **In Program Play mode or LCD Edit mode, press the [WRITE] key.**

The upper line of the LCD will continue to show what had been displayed when you pressed [WRITE] key. (In the figure below, the [WRITE] key was pressed in LCD Edit mode Page 01A: COMMON.)
The lower line of the LCD will indicate the writing destination program number (the number of the program that you edited).



If you decide to cancel the Write operation, press the [EXIT] key.

② **Use the [+/YES] [–/NO] keys to select the writing destination program number.**

If you do not need to change the writing destination, proceed to step ③.

③ **Press the [WRITE] key.**

The display will ask you for confirmation.

④ **Press the [WRITE] key once again.**

When the LCD screen indicates “Completed,” the data has been written.

Never turn off the power during the Write operation. This can damage the data.

⑤ **Press the [EXIT] key.**

You will return to the screen where you started.

Editing a synth program

Here is the procedure for editing a synth program.
Unless otherwise specified, this is the procedure for editing a program whose voice mode is **Single**.
The explanation assumes that you are already in LCD Edit mode.

1. Specify how notes will be sounded

In Page 03A: VOICE “Assign,” specify how the timbre will sound the notes.

○ **Press the SELECT [2] key.**

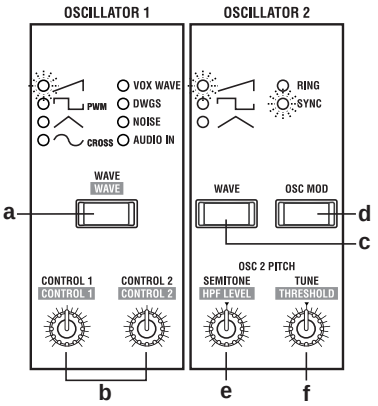
The LCD screen will show Page 03A: VOICE “Assign.”

```
03A VOICE
Assign:   Mono
```

Use the [+/YES] [–/NO] keys to change the setting.
If you wish to play chords, select **Poly**. If you wish to play single notes, select **Mono** or **Unison**.

2. Make oscillator settings

Make settings for oscillator 1 and 2, which will be the basis of the sound.



a. Select the waveform for oscillator 1

○ **Press the OSCILLATOR 1 [WAVE] key.**

Each time you press the key, the waveform will change, and the LED for the selected waveform will light. For oscillator 1 you can choose from eight waveforms including the external output waveform.

b. Set waveform parameters

① **Rotate the [CONTROL 1] knob.**

The LCD screen will show Page 05B: OSC 1 “Control 1.” The parameter will depend on the selected waveform.

```
05B OSC 1
Control 1:   000
```

The waveforms and parameters correspond as follows.

WAVE	CONTROL1
◿	Modify waveform
⊓	Modify waveform
∧	Modify waveform
∿	Cross modulation amount
VOX WAVE	Modify waveform
DWGS	————————————————
NOISE	Cutoff of the LPF inside the oscillator
AUDIO IN	Volume balance of AUDIO IN 1 and AUDIO IN 2

For details on the parameters, refer to the parameter guide.

② **Rotate the [CONTROL 2] knob.**

The LCD screen will show Page 05C: OSC 1 “Control 2.” The parameter will depend on the waveform selected for “Wave.”

```
05C OSC 1
Control 2:   060
```

The waveforms and parameters correspond as follows.

WAVE	CONTROL2
◿	Depth of LFO1 modulation
⊓	Depth of LFO1 modulation
∧	Depth of LFO1 modulation
∿	Depth of LFO1 modulation
VOX WAVE	Depth of LFO1 modulation
DWGS	Select DWGS waveform (64 types)
NOISE	Resonance of LPF inside the oscillator
AUDIO IN	Depth of LFO1 modulation

For details on the parameters, refer to the parameter guide.

c. Select the oscillator 2 waveform

○ **Press the OSCILLATOR 2 [WAVE] key**

The waveform will change each time you press the key, and the LED of the selected waveform will light. For oscillator 2, you can select from three waveforms.
The most common way to use this is to select the same waveform as for oscillator 1, and change the pitch to add depth to the sound.

d. Select the modulation type for the oscillator

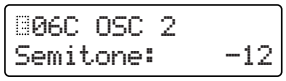
○ **Press the [OSC MOD] key.**

Each time you press the key, the modulation type will change, and the LED for the selected modulation type will light. Including a setting of “off,” you can select from four modulation types.

e. Adjust the pitch of oscillator 2 in semitone units

○ **Rotate the [SEMITONE] knob.**

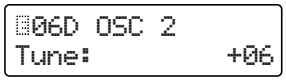
The LCD screen will show Page 06C: OSC 2 "Semitone." The most common way to use this is to set oscillator 2 one or two octaves lower than the pitch of oscillator 1.



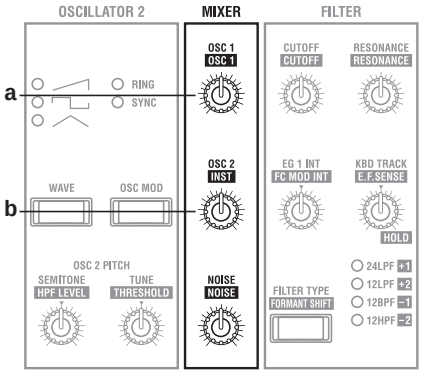
f. Adjust the pitch of oscillator 2

○ **Rotate the [TUNE] knob.**

The LCD screen will show Page 06D: OSC 2 "Tune." By slightly skewing the pitch to create a detuning effect, you can give the sound more depth.



3. Set the volume of each oscillator



a. Adjust the volume of oscillator 1

○ **Rotate the MIXER [OSC1] knob.**

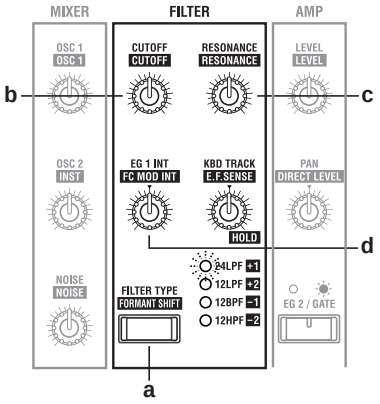
The LCD screen will show Page 07A: MIXER "OSC 1 Level."

b. Adjust the volume of oscillator 2

○ **Rotate the MIXER [OSC2] knob.**

The LCD screen will show Page 07B: MIXER "OSC 2 Level."

4. Make filter settings



a. Select the filter type

○ **Press the [FILTER TYPE] key.**

Each time you press the key, the filter type will change, and the LED of the selected filter type will light.
The filter type will have a major impact on the character of the sound.

b. Adjust the brightness of the sound

○ **Rotate the FILTER [CUTOFF] knob.**

The LCD screen will show Page 08B: FILTER "Cutoff." Rotating the knob toward the right (increasing the value) will brighten the sound.

c. Adding character to the sound

○ **Rotate the FILTER [RESONANCE] knob.**

The LCD screen will show Page 08C: FILTER "Resonance."
Rotating the knob toward the right (increasing the value) will dramatically change the character of the sound.
The resonance effect will also be significantly affected by the filter type and cutoff settings.

d. Adjusting the depth of the effect from EG1

EG1 changes the filter cutoff over time. "EG 1 Int" adjusts the depth of this effect.

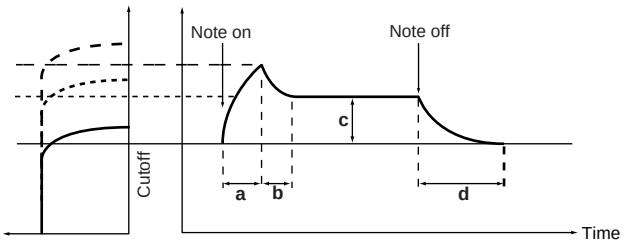
○ **Rotate the FILTER [EG 1 INT] knob.**

The LCD screen will show Page 08D: FILTER "EG 1 Int."
Rotating the knob to the right of center (+ values) will cause the effect to be applied to the cutoff in the positive (+) direction.
Rotating the knob to the left of center (– values) will cause the effect to be applied to the cutoff in the negative (–) direction.

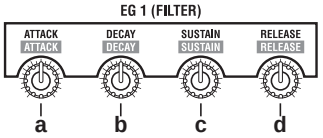
5. Specify time-varying change in the tone

Use EG 1 to create time-varying change in the cutoff frequency (FILTER "Cutoff").

If you wish to use the front panel knobs to adjust the EG 1 parameters, use the SEQ EDIT [SELECT] key to make the SEQ 1–3 LED's go off.



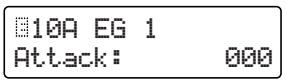
a: Attack Time **c: Sustain Level**
b: Decay Time **d: Release Time**



a. Adjust the speed at which the tone will change during the attack

○ **Rotate the EG 1 [ATTACK] knob.**

The LCD screen will show Page 10A: EG 1 "Attack." Rotating the knob toward the right will cause the tone to change more slowly, and rotating it toward the left will cause the tone to change instantly.

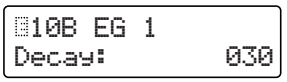


If rotating the knob does not produce an effect, try adjusting the FILTER [EG 1 INT] knob, or make sure that the SEQ EDIT SEQ 1–3 LED's are dark. If these LED's are lit, it is not possible to edit the EG or LFO. The knobs will function to edit the sequence data.

b. Adjust the speed at which the tone will change during the decay

○ **Rotate the EG 1 [DECAY] knob.**

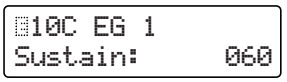
The LCD screen will show Page 10B: EG 1 "Decay." Rotating the knob toward the right (increasing the value) will cause a longer decay time until the sustain level is reached.



c. Adjust the brightness of the sustained sound

○ **Rotate the EG 1 [SUSTAIN] knob.**

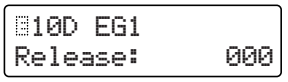
The LCD screen will show Page 10C: EG 1 "Sustain." The change in brightness produced by the [SUSTAIN] knob will depend on the setting of the [EG 1 INT] knob.



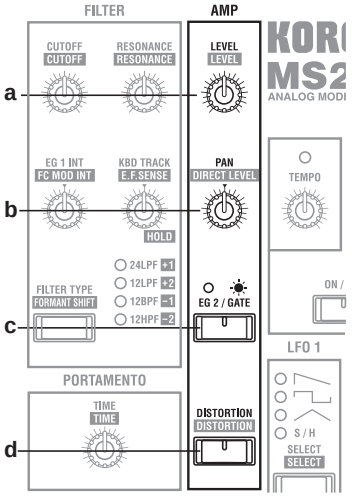
d. Adjust the speed at which the tone will change after the note is released

○ **Rotate the EG 1 [RELEASE] knob.**

The LCD screen will show Page 10D: EG 1 "Release." Rotating the knob toward the right will make the sound change more slowly, and rotating it toward the left will make it change instantly.



6. Adjust the output of the timbre



a. Adjust the volume of the timbre

○ **Rotate the [LEVEL] knob.**

The LCD screen will show Page 09A: AMP "Level." If the volume changes over time, this level will be the maximum level that occurs during the change in volume.

b. Adjust the output panpot (stereo position)

○ **Rotate the [PAN] knob.**

The LCD screen will show Page 09B: AMP "Panpot." When the knob is in the center (CNT), the output will be centered.

c. Select the envelope source for the volume

○ **Press the [EG 2 /GATE] key.**

Each time you press the key, the envelope source will change.
If you want the volume change over time, select **EG** 2 ([EG 2/GATE] key LED dark).
If you want the volume to sound at a fixed level, as on an organ, select **GATE** ([EG 2/GATE] key LED lit).

d. Apply distortion to the output

○ **Press the [DISTORTION] key.**

Each time you press the key, distortion will be turned on/off.
When this is on ([DISTORTION] key LED lit), distortion will be applied. This is effective when you wish to produce a hard\ harsh tone.

note If distortion is turned on, use the MIXER knobs to adjust the degree of distortion.

note If you adjust FILTER "Cutoff" or "Resonance," the character of the distortion will change.

e. Use keyboard playing dynamics to vary the volume

○ **Press the SELECT [7] key, and then press the CURSOR [►] key four times.**

The LCD screen will show Page 09E: AMP "Vel Sense."
Use the [+/YES] [–/NO] keys to set the value.
Positive (+) values will cause the volume to increase as you play more strongly.
Negative (–) values will cause the volume to decrease as you play more strongly.

```
09E AMP
Vel Sense:   +30
```

f. Vary the volume by the keyboard location you play

○ **From the "Vel Sense" screen, press the CURSOR[►] key.**

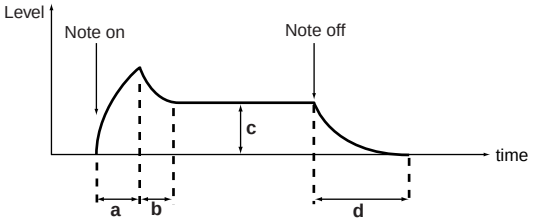
The LCD screen will show Page 09F: AMP "KBD Track."
Use the [+/YES] [–/NO] keys to set the value.
Positive (+) values will cause the volume to increase as you play upward on the keyboard, and decrease as you play downward on the keyboard.
Negative (–) values will cause the volume to increase as you play downward on the keyboard, and decrease as you play upward on the keyboard.

```
09F AMP
KBD Track:   +25
```

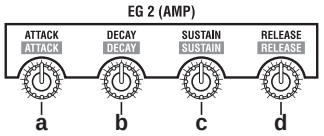
7. Specify time-variant changes in volume

EG 2 produces time-variant changes in the AMP "Level."

If you wish to use the front panel knobs to adjust the EG 2 parameters, you must first use the SEQ EDIT [SELECT] key to make the SEQ 1–3 LED's go dark.



a: Attack Time **c: Sustain Level**
b: Decay Time **d: Release Time**



a. Adjust the speed at which the sound will attack\ trigger

○ **Rotate the EG 2 [ATTACK] knob.**

The LCD screen will show Page 11A: EG 2 "Attack."
Rotating the knob toward the right (increasing the value) will cause the sound to attack/ trigger more slowly, and rotating it toward the left (decreasing the value) will cause the sound to attack/ trigger instantly.

```
11A EG 2
Attack:      000
```

If rotating the knob does not produce an effect, make sure that the AMP [EG 2/GATE] key LED is dark.

b. Adjust the speed at which the volume will decay

○ **Rotate the EG 2 [DECAY] knob.**

The LCD screen will show Page 11B: EG 2 "Decay."
Rotating the knob toward the right (increasing the value) will cause a longer decay time until the sustain is reached.

```
11B EG 2
Decay:       021
```

c. Adjust the volume of the sustained sound

○ **Rotate the EG 2 [SUSTAIN] knob.**

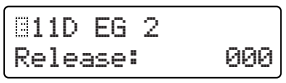
The LCD screen will show Page 11C: EG 2 "Sustain."
Rotating the knob toward the right (increasing the value) will produce a louder volume during the sustain.

```
11C EG 2
Sustain:     090
```

d. Adjust the speed at which the volume will decay after the note is released

○ **Rotate the EG 2 [RELEASE] knob.**

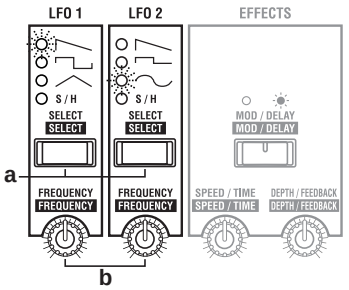
The LCD screen will show Page 11D: EG 2 "Release." Rotating the knob toward the right (increasing the value) will make the volume decay more slowly, and rotating it toward the left (decreasing the value) will shorten the decay.
For sounds such as pads, strings or organs use a higher value.



8. Make LFO settings

The LFO (Low Frequency Oscillator) applies cyclic change to a parameter. If it is applied to the pitch of the oscillator, the result is vibrato. If applied to the filter cutoff, the result is wah. If applied to the amp level, the result is a tremolo effect.

If you wish to use the front panel knobs to adjust the LFO parameters, you must first use the SEQ EDIT [SELECT] key to turn off the SEQ 1–3 LED's.



a. Select the LFO waveform

○ **Press the [SELECT] key.**

Each time you press the key, the waveform will change and the LED of the selected waveform will light.
The type of change will depend on the waveform you select.

b. Set the frequency of the LFO

○ **Rotate the [FREQUENCY] knob.**

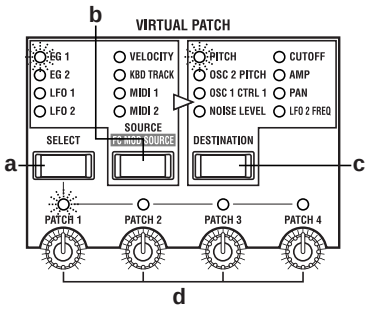
Rotating the knob toward the right (increasing the value) will speed up the frequency of change.

note You can synchronize the LFO frequency to the tempo specified by the [TEMPO] knob. Refer to the Parameter Guide, Program parameters p.41.

9. Apply modulation to parameters (Virtual Patch)

Virtual Patch allows eight modulation sources to be assigned to various parameters that make up the sound, in order to modulate the corresponding parameters.

If you wish to use the front panel knobs to set or adjust the Virtual Patch parameters, you must first use the SEQ EDIT [SELECT] key to turn off the SEQ 1–3 LED's.



a. Select a patch

○ **Press the [SELECT] key to select a patch.**

Each time you press the key, you will cycle through PATCH 1–4, and the LED of the selected patch will light.

b. Select a modulation source

○ **Press the [SOURCE] key.**

Each time you press the key, the modulation source will change and the LED of the selected modulation source will light.
For details on the parameters, refer to the Parameter Guide, Program parameters p.42.

c. Select the parameter to which modulation will be applied

○ **Press the [DESTINATION] key.**

Each time you press the key, the parameter will change and the LED of the selected parameter will light.
For details on the parameters, refer to the Parameter Guide, Program parameters p.42.

d. Set the depth of modulation.

○ **Use the [PATCH 1–4] knobs to set the depth of modulation.**

Rotate the knob for the patch that is selected by the [SELECT] key.
Rotating the knob toward the right of center (+ values) will apply the effect in the positive (+) direction.
Rotating the knob toward the left of center (– values) will apply the effect in the negative (–) direction.

10. Make MOD SEQUENCE settings

a. Set SEQ COMMON parameters

As preparation before creating the actual sequence data, the SEQ COMMON parameters are used to specify things such as the maximum number of steps in the sequence and the playback method. Use the [+/YES] [–/NO] keys to set the values.

① **Press the SELECT [11] key.**

The LCD screen will show Page 18A: SEQ COMMON "Last Step."
Specify the length (maximum number of steps) of the sequence that you wish to record, in the range of 1–16.

```
18A SEQ COMMON
Last Step:    16
```

② **Press the CURSOR [►] key.**

The LCD screen will show Page 18B: SEQ COMMON "Seq Type."
Specify the direction in which the steps will play back.

```
18B SEQ COMMON
Seq Type:Forward
```

③ **Press the CURSOR [►] key.**

The LCD screen will show Page 18C: SEQ COMMON "Run Mode."
Specify the loop setting for sequence playback.

```
18C SEQ COMMON
Run Mode:Loop
```

④ **Press the CURSOR [►] key.**

The LCD screen will show Page 18D: SEQ COMMON "Key Sync."
Specify how the sequence will be reset when a note-on occurs.

```
18D SEQ COMMON
Key Sync:Timbre
```

⑤ **Press the CURSOR [►] key.**

The LCD screen will show Page 18E: SEQ COMMON "Resolution."
Specify the playback speed of the sequence relative to the internal clock.

```
18E SEQ COMMON
Resolution: 1/48
```

b. Specify sequence data for each step

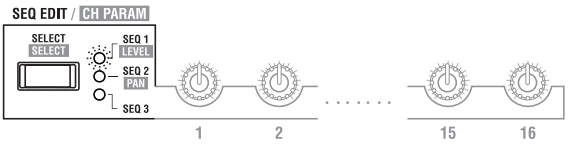
Here's how to select a program for which sequence is turned on, and record sequence data for each step.

① **In Program Play mode, select a program for which sequence is turned on.**

② **Press the [EDIT] key.**

You will enter LCD Edit mode.

③ **Press the SEQ EDIT/CH PARAM [SELECT] key to make the SEQ 1 LED light.**



The LCD screen will show Page 19A: SEQ 1 "Knob."
For this example, we will assign FILTER "Cutoff" to SEQ1.

```
19A SEQ 1
Knob:None
```

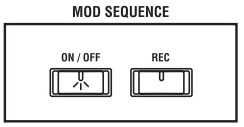
④ **Press the [+/YES] key to set "Knob" to Cutoff.**

```
19A SEQ 1
Knob:Cutoff
```

note If you wish to assign a parameter to SEQ 2 or SEQ 3, use the [SELECT] key to select SEQ 2 or SEQ 3.

⑤ **Press the MOD SEQUENCE [ON/OFF] key.**

The [ON/OFF] key LED will light, and the sequence will be turned on.

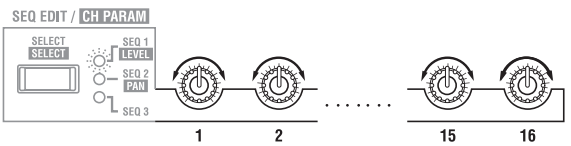


⑥ **Press and hold a note on the keyboard.**

The program will sound, and the SELECT [1]–[16] keys will light consecutively.

⑦ **While listening to the sound, use the sixteen knobs located beside the SEQ EDIT LED to specify the sequence data for each step.**

The sixteen knobs are normally used to edit program sounds (EG or LFO etc.), but when the [SELECT] key has selected a sequence, they are used to set and edit sequence data.
The numbers shown below each knob correspond to the sequence steps. Rotate the knob for the step you wish to set.



When you rotate a knob, the LCD screen will show 19C: SEQ 1 "Step Value."

```
19C SEQ 1
Step[01]:    +10
```

Step Number — Value

The value of each step is the amount of change relative to the parameter value that is currently written or set.

If you wish to set the value in more detail, use the [+/YES] [–/NO] keys.

If you specify a value for a step number that is beyond the Page 18A: SEQ COMMON "Last Step" setting, it will be ignored.

note You can use the above procedure to edit sequence data that was created previously or that was recorded in real-time.

c. Record sequence data in realtime (Motion Rec)

Motion Rec allows realtime knob movements to be recorded in the steps of a sequence.

Here we will explain how to record movements of the FILTER [CUTOFF] knob in a program for which sequence data has not yet been recorded.

① **In Program Play mode, select a program for which sequence is turned off.**

Select a program for which changes in tone can be heard clearly.

② **Press the MOD SEQUENCE [ON/OFF] key to turn on the sequence.**

③ **Press the SEQ EDIT/CH PARAM [SELECT] key to select a sequence (SEQ 1–3).**

For this example, select SEQ 1.

④ **Press the MOD SEQUENCE [REC] key.**

You are ready to record. The [REC] key LED will blink, and the SELECT [1]–[16] keys will light consecutively.

It is not possible to enter record-ready mode unless a sequence has been selected.

⑤ **Rotate the ARPEGGIATOR [TEMPO] knob to adjust the speed of the sequence.**

Watch the speed at which the SELECT [1]–[16] keys light, and adjust the speed so that you will be able to record comfortably.

⑥ **While playing the keyboard, rotate the FILTER [CUTOFF] knob.**

Recording will begin from the step at which you rotated the knob.
When recording begins, the [REC] key LED will change from blinking to lit.
When you record to the step that was specified by "Last Step," the [REC] key LED will go dark, and recording will end.
While playing the keyboard, listen to the tonal change. If you are not satisfied, you can either press the [REC] key once again and re-record, or use the sixteen knobs to edit individual steps.
If you wish to keep the recorded settings, perform the Write procedure. (☞p.19 "5. Writing (saving) an edited program")

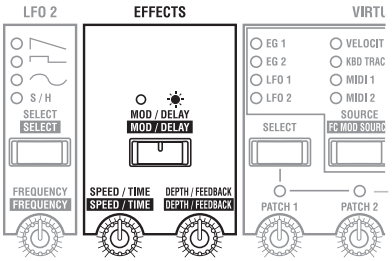
If two or more knobs are rotated, the knob that was rotated first will be recorded.

It is not possible to record the ARPEGGIATOR or EFFECTS knobs.

Editing effect parameters

The **MS2000/MS2000R** contains modulation, delay, and equalizer effects. Here we will explain how to make settings for the modulation effect and the delay.

If you wish to use the front panel knobs to adjust the parameters of the modulation effect and delay, you must first use the SEQ EDIT [SELECT] key to turn off the SEQ 1–3 LED's.



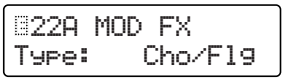
1. Modulation effect settings

If you wish to use the front panel knobs to make modulation effect settings, you must first turn off the [MOD/DELAY] key LED.

a. Select the effect type

○ **Press the SELECT [12] key.**

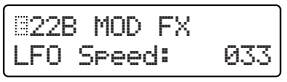
The LCD screen will show Page 22A: MOD FX "Type." Use the [+/YES] [–/NO] keys to select the effect type. There are three types of modulation effect.



b. Adjust the modulation frequency

○ **Rotate the [SPEED/TIME] knob.**

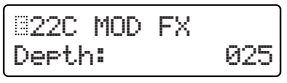
The LCD screen will show Page 22B: MOD FX "LFO Speed."
As you rotate the knob toward the right (increasing the value), the modulation frequency will become faster.



c. Adjust the effect depth and the amount of feedback

○ **Rotate the [DEPTH/FEEDBACK] knob.**

The LCD screen will show Page 22C: MOD FX "Depth." Increasing the value will cause modulation to be deeper, increasing the amount of feedback.



2. Delay settings

If you wish to use the front panel knobs to set the delay, you must first turn on the [MOD/DELAY] key LED.

a. Select the delay type

○ **Press the SELECT [13] key.**

The LCD screen will show Page 23A: DELAY FX "Type."
Use the [+/YES] [–/NO] keys to select the delay type.
There are three types of delay.

b. Adjust the delay time

○ **Rotate the [SPEED/TIME] knob.**

The LCD screen will show Page 23C: DELAY FX "Delay Time."
Rotating the knob toward the right (increasing the value) will lengthen the delay time.

note You can synchronize the delay time to the tempo specified by the [TEMPO] knob. ☞Parameter guide p.44, Page 23B: DELAY FX "Tempo Sync."

c. Adjust the effect depth and the amount of feedback

○ **Rotate the [DEPTH/FEEDBACK] knob.**

The LCD screen will show Page 23E: DELAY FX "Depth."
Rotating the knob toward the right (increasing the value) will deepen the delay sound, increasing the amount of feedback.

Editing arpeggio parameters

Here we will explain the parameters that can be set only in LCD Edit mode.
Use the [+/YES] [–/NO] keys to set the values.
For details on the parameters that can be set in Program Play mode, refer to the section of the Basic Guide entitled Playing, in "Playing arpeggios – 2. Using the knobs and keys to modify the settings" (☞p.15).

a. Select the timbre that will be used to play the arpeggio (Dual/Split only)

○ **Press the SELECT [15] key, and then press the CURSOR[►] key four times.**

The LCD screen will show Page 25E: ARPEGGIO "Target."
Select the timbre that will be used to play the arpeggio when the voice mode is **Dual** or **Split**. (This will be displayed only for **Dual** or **Split**.)

b. Specify the keyboard synchronization

○ **Press the CURSOR [►] key.**

The LCD screen will show Page 25F: ARPEGGIO "Key Sync."
If this is turned **ON**, the arpeggio pattern will begin playing from the beginning whenever a note-on occurs.

c. Set the resolution

○ **Press the CURSOR [►] key.**

The LCD screen will show Page 25G: ARPEGGIO "Resolution."
Set the resolution (timing interval between notes) relative to the tempo of the arpeggio playback.

d. Make the rhythm swing

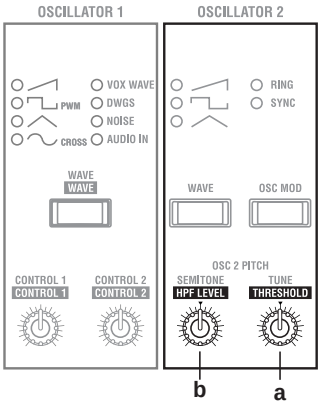
○ **Press the CURSOR [►] key.**

The LCD screen will show Page 25H: ARPEGGIO "Swing."
This setting skews the timing so that the arpeggiator will offset the even-numbered notes, giving you a swing feel.

Editing vocoder program

Here's the procedure for editing a program when in the Vocoder mode.
For details on parameters that are the same as the synth program, please refer to the explanation for synth programs. Here we will explain the parameters that can be set only for a vocoder program.

1. Adjust the mic input audio



a. Cut the noise when there is no input

① **Rotate the [THRESHOLD] knob.**

The LCD screen will show Page 06B: AUDIO IN 2 "Threshold."
Rotating the knob toward the right will make it more likely that the audio will be cut.
Adjust this so that noise is not obtrusive when you are not speaking into the mic.

```
06B AUDIO IN 2
Threshold:   069
```

② **Press the SELECT [5] key.**

The LCD screen will show Page 06A: AUDIO IN 2 "Gate Sense."
Adjust this so that the vocoder sound that is output is not interrupted unnaturally. Use the [+/YES] [–/NO] keys to adjust the value.

```
06A AUDIO IN 2
Gate Sense:  100
```

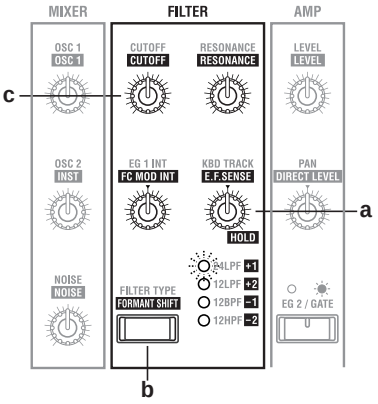
b. Adjust the consonants of the vocoder sound

○ **Rotate the [HPF LEVEL] knob.**

The LCD screen will show Page 06C: AUDIO IN 2 "HPF Level."
Rotating the knob toward the right (increasing the value) will emphasize the consonants of the input sound.

```
06C AUDIO IN 2
HPF Level:   100
```

2. Set the filter



a. Adjust the sensitivity of the ENVELOPE FOLLOWER for the modulator

○ **Rotate the [E.F.SENSE] knob.**

The LCD screen will show Page 08F: FILTER "E.F.Sense." Rotating the knob toward the right (increasing the value) will smooth the attack of the vocoder output, and lengthen the release.

```
08F FILTER
E.F.Sense:   050
```

b. Shift the cutoff frequency of the carrier filters

○ **Press the [FORMANT SHIFT] key.**

When you press the key, the formant shift amount will change, and the LED for the selected shift amount will light.
By shifting the filters, you can dramatically change the character of the vocoder output.

c. Adjust the cutoff frequency of the carrier filters

○ **Rotate the FILTER [CUTOFF] knob.**

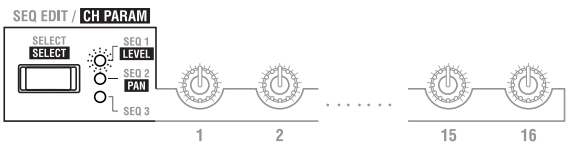
The LCD screen will show Page 08B: FILTER "Cutoff."

```
08A FILTER
Cutoff:      +00
```

Use the [CUTOFF] knob to adjust the filter shift amount in a range of ±2 steps.
By using this in conjunction with the [FORMANT SHIFT] key, the cutoff frequency can be shifted in a range of ±4 steps.

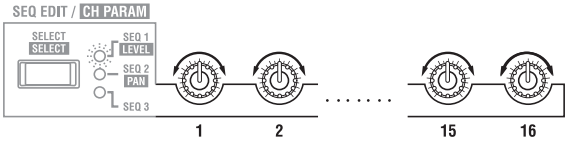
d. Adjust the output level of the carrier filters

① **Press the CH PARAM [SELECT] key to make the LEVEL LED light.**



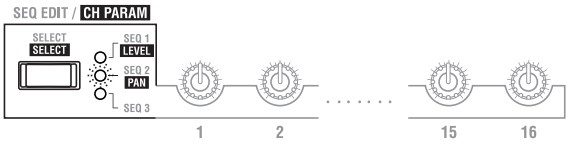
② **Use the sixteen knobs located beside CH PARAM to adjust the output level of each filter.**

Rotating the knob far left is a setting of 0, and rotating it far right is a setting of 127 (max).



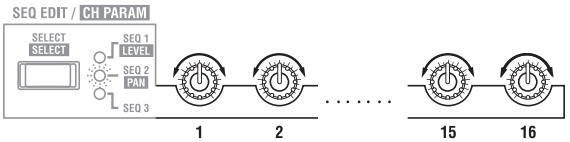
f. Adjust the panpot (stereo location) of the carrier filters

① **Press the CH PARAM [SELECT] key to make the PAN LED light.**



② **Use the sixteen knobs located beside CH PARAM to adjust the panpot of each filter.**

When the knob is in the center (CNT), the output will be in the center. When rotated far left, the output will be only in the L channel. When rotated far right, the output will be only in the R channel.

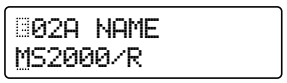


Changing the program name

a. Using the CURSOR [◄] [►] keys and the [+/YES] [–/NO] keys

① **Press the SELECT [1] key, and then press the PAGE [+] key.**

The LCD screen will show Page 02A: NAME.



② **Use the CURSOR[◄][►] keys to move the cursor to the character that you wish to change.**

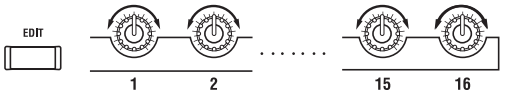
③ **Use the [+/YES] [–/NO] keys to select the desired character.**

④ **Repeat steps ② and ③ to specify the desired program name.**

You can specify a program name of up to 12 characters.

b. Using the [EDIT] key and the sixteen knobs

When the LCD screen shows Page 02A: NAME, you can use the [EDIT] key and the sixteen knobs (used for sequence and vocoder settings) to change the program name as explained below.



○ **While pressing the [EDIT] key, rotate knobs 1–12.**

The corresponding character (1–12) of the name will change.

○ **While pressing the [EDIT] key, rotate knob 13.**

Uppercase alphabetical characters can be selected for the character at the cursor location.

○ **While pressing the [EDIT] key, rotate knob 14.**

Lowercase alphabetical characters can be selected for the character at the cursor location.

○ **While pressing the [EDIT] key, rotate knob 15.**

Numerals can be selected for the character at the cursor location.

○ **While pressing the [EDIT] key, rotate knob 16.**

Symbols (including a space) can be selected for the character at the cursor location.

c. Deleting a character

① **Use the CURSOR[◄][►] keys to move the cursor to the character that you wish to delete.**

② **Hold down the [EDIT] key, and press the CURSOR [◄] key.**

The character at the cursor will be deleted.

d. Inserting a character

A character can be inserted if no more than eleven characters have already been specified, and if there is a space at the end of the character string.

① **Use the CURSOR[◄][►] keys to move the cursor to the location where you wish to insert a character.**

② **Hold down the [EDIT] key, and press the CURSOR [►].**

A character will be inserted at the cursor location. The inserted character will be the last-deleted character. If you are inserting a character for the first time, it will be a space.

Editing Global parameters

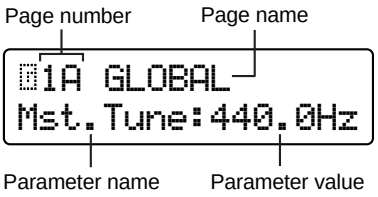
In Global mode you can make settings that affect the entire **MS2000/MS2000R**, and also create user scales.

Basic editing procedure

a. Enter Global mode

○ **Press the [GLOBAL] key.**

You will enter Global mode. The upper line of the LCD screen will show the page number and page name, and the lower line will show the parameter name and parameter value.



b. Select a page

In the same way as in LCD Edit mode, use the PAGE [+][–] keys and SELECT [1]–[16] keys to select the desired page.

The SELECT [1]–[16] keys correspond to pages as shown below.

Key	Page
SELECT [1]	Page1A: GLOBAL “Mst.Tune”
SELECT [2]	Page1D: GLOBAL “Vel.Curve”
SELECT [3]	Page1F: GLOBAL “AudioInThru”
SELECT [4]	Page2A: MEMORY “Protect”
SELECT [5]	Page3A: MIDI “MIDI Ch”
SELECT [6]	Page3C: MIDI “Clock”
SELECT [7]	Page3D: MIDI “MIDI1”
SELECT [8]	Page3F: MIDI “MIDI Dump”
SELECT [9]	Page4A: MIDI FILTER “ProgChg”
SELECT [10]	Page4B: MIDI FILTER “CtrlChg”
SELECT [11]	Page4C: MIDI FILTER “P.Bend”
SELECT [12]	Page4D: MIDI FILTER “SystemEx”
SELECT [13]	Page6A: PEDAL&SW “A.Pedal”
SELECT [14]	Page6B: PEDAL&SW “A.SwFunc”
SELECT [15]	Page7A: USERSCALE “Key: Detune”
SELECT [16]	Page8A: CALIB (AS)

c. Select a parameter

As in LCD Edit mode, use the CURSOR[◄][►] keys to select the desired parameter. (☞p.19)

d. Input the value

○ **Use the [+/YES] [–/NO] keys to input the value.**

When you press the [+/YES] [–/NO] keys, the value will increase or decrease in steps of one.
If you hold down the [+/YES] key and press the [–/NO] key, the value will increase in steps of ten.
If you hold down the [–/NO] key and press the [+/YES] key, the value will decrease in steps of ten.

e. Write (save) the Global parameters

Global parameters that you edit will revert to their unedited state if you turn off the power without saving. If you wish to save your settings, you must perform the Write operation.

To write Global parameters, press the [WRITE] key in Global mode.

The LCD screen will ask you for confirmation. If you wish to write the data, press the [WRITE] key once again. To cancel the Write operation, press the [EXIT] key in the confirmation screen.

note Global parameters can be saved regardless of the memory protect setting (Global mode Page 2A: MEMORY “Protect”).

Never turn off the power during the Write operation. This can damage the data.

Editing parameters

1. Defeat memory protect

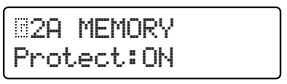
To prevent data from being rewritten accidentally, the **MS2000/MS2000R** provides a memory protect function that disables writing to memory. In order to write edited data, you must first turn memory protect **OFF** (so that writing will not be disabled).

① **Press the [GLOBAL] key.**

You will enter Global mode.

② **Press the SELECT [4] key.**

The LCD screen will show Page 2A: MEMORY “Protect.”



③ **Press the [–/NO] to turn “Protect” OFF.**

Now it will be possible to execute the write operation.

2. Restoring settings to their factory state

The factory settings are called the “preloaded data.” You can load this preloaded data to restore the **MS2000/MS2000R**’s programs and global settings to the factory state.

When you load this data, all data in the **MS2000/MS2000R** will be rewritten to the factory settings. Before you perform this operation, make sure that it is OK to overwrite the data.

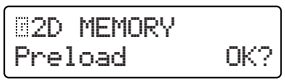
If Global mode Page 2A: MEMORY “Protect” is **ON**, the preload data cannot be loaded. If you wish to load the preload data, you must first turn “Protect” **OFF**.

① **Press the [GLOBAL] key.**

You will enter Global mode.

② **Press the SELECT [4] key, and then press the CURSOR [►] key three times.**

The LCD screen will show Page 2D: MEMORY “Preload.”



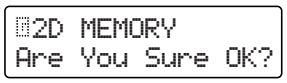
③ **Press the [+/YES] key.**
A screen will appear in which you can select the data to be loaded.

④ **Use the [+/YES] [–/NO] keys to select the data that you wish to load.**
If **1PROG** is selected, only a single program will be loaded. In this case, use the [+/YES] [–/NO] keys to select the program number to be loaded, and the loading destination (use the CURSOR [►] key to move).

If **PROG** is selected, 128 programs will be loaded.

If **GLOBAL** is selected, Global data (the settings of Global mode) will be loaded.

⑤ **Use the CURSOR [►] key to move the cursor to OK?, and press the [+/YES] key.**
The screen will ask for confirmation.



⑥ **Press the [+/YES] key once again.**
The data will be loaded.
When the screen indicates "Completed," loading has been completed.

⑦ **Press the [EXIT] key.**
You will return to the screen where you begin the "Preload" process.

3. Synchronization with external MIDI devices

Settings for synchronization with a connected external MIDI device are made in Page 3C: MIDI "Clock."

a. Synchronizing an external MIDI device to the MS2000/MS2000R

You can synchronize an external MIDI device such as a sequencer or rhythm machine to the tempo of the **MS2000/MS2000R** arpeggiator.

① **Use a MIDI cable to connect the MS2000/MS2000R's MIDI OUT connector to the external MIDI device's MIDI IN connector (☞p.10).**

② **Press the [GLOBAL] key to enter Global mode.**

③ **Press the SELECT [6] key.**
The LCD screen will show Page 3C: MIDI "Clock."

④ **Use the [+/YES] [–/NO] keys to select Internal.**
With a setting of **Internal**, MIDI Clock messages will be transmitted from the **MS2000/MS2000R** at the tempo specified by the ARPEGGIATOR [TEMPO] knob.

⑤ **Make settings so that the external MIDI device will receive MIDI Clock messages from another device (i.e., so that the external MIDI device will function as a slave device).**
The external MIDI device (sequencer or rhythm machine) will operate according to the tempo set by the [TEMPO] knob.

b. Synchronizing the MS2000/MS2000R to an external MIDI device

① **Use a MIDI cable to connect the MS2000/MS2000R's MIDI IN connector to the external MIDI device's MIDI OUT connector (☞p.10).**

② **Press the [GLOBAL] key to enter Global mode.**

③ **Press the SELECT [6] key.**
The LCD screen will show Page 3C: MIDI "Clock."

④ **Use the [+/YES] [–/NO] keys to select External.**

⑤ **Make settings so that the external MIDI device will transmit MIDI Clock messages (i.e., so that the external MIDI device will function as a master device).**
The sequence or arpeggiator will operate according to the tempo of the external MIDI device.

For details on synchronization settings for your external MIDI device, refer to the owner's manual for your device.

4. Saving data on an external device (Data Dump)

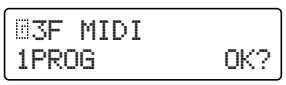
Various types of data from the **MS2000/MS2000R**'s internal memory can be transmitted as MIDI exclusive data, and saved on another connected MIDI device such as a data filer.

Before you begin, connect a device that is able to receive a MIDI data dump (a data filer, computer, or another **MS2000/MS2000R** unit), and set the global MIDI channels of both devices to match.

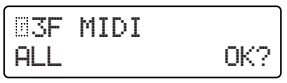
① **Press the [GLOBAL] key.**
You will enter Global mode.

② **Press the SELECT [8] key.**
The LCD screen will show Page 3F: MIDI "MIDI Dump."

③ **Press the [+/YES] key.**
The display will indicate the type of data dump to be transmitted.



④ **Use the [+/YES] [–/NO] keys to specify the data that will be transmitted.**



If **1PROG** is selected, only the data of the currently selected program will be transmitted.

If **PROG** is selected, all program data will be transmitted.

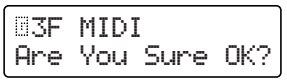
If **GLOBAL** is selected, Global data will be transmitted.

If **ALL** is selected, all programs and Global data will be transmitted.

⑤ **Press the CURSOR [►] key to move the cursor to OK?**

⑥ **Press the [+/YES] key.**

The screen will ask you to confirm the data transmission.



⑦ **Press the [+/YES] key.**

The data will be transmitted.

When the transmission is completed, the display will indicate “Completed...”

Please do not touch the knobs, keys, keyboard, or wheels etc. of the **MS2000/MS2000R** while the data is being transmitted.

If you wish to receive a data dump on the **MS2000/MS2000R**, you must first turn Global mode Page 2A: MEMORY “Protect” **OFF**. If “Protect” is **ON**, data dumps cannot be received.

Parameter Guide

Parameter Guide

Program parameters

Global parameters

Program parameters

These are the parameters that make up the sound of a program.
If you wish to save a sound, you must perform the Write operation (☞p.19, Basic Guide, Edit section "5. Writing (saving) an edited program").
Uppercase parameter names enclosed in parentheses (‹ ›) are parameters for which there is a front panel knob or key.

1. PROGRAM COMMON Parameters

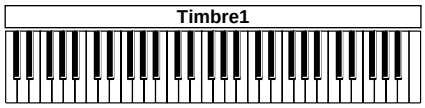
These are parameters that apply to the entire program.

Page01: COMMON

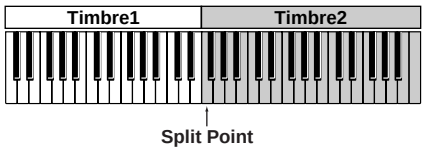
A: Mode ..... [Single...Vocoder]

This selects the voice mode of the program.

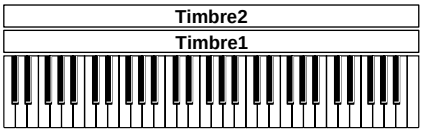
Single
When you play the keyboard, a single timbre will sound. The program can be played with up to four voices (four notes).



Split
Two timbres can be played on different areas of the keyboard. The number of notes that can be played on each timbre is specified by "Timbre Voice."



Dual
Two timbres will sound simultaneously when you play the keyboard. The number of notes that can be played on each timbre is specified by "Timbre Voice."
By using Page 03B: VOICE "MIDI ch" to specify a different MIDI channel for each of the two timbres, you can use the **MS2000/MS2000R** as a multi-timbral MIDI tone generator.



Vocoder
By inputting an audio signal to the AUDIO IN 2 connector, you can use the **MS2000/MS2000R** as a four-voice vocoder.
For details on the vocoder parameters, refer to p.49 "4. Vocoder Parameters."

B: Timbre Voice ..... [1+3, 2+2, 3+1]

This specifies the maximum number of notes that can be played by each timbre.
This parameter will be displayed and can be set only if "Mode" is **Dual** or **Split**.

1+3
Timbre 1 will play one voice, and timbre 2 will play three voices.

2+2
Each timbre will play two voices.

3+1
Timbre 1 will play three voices, and timbre 2 will play one voice.

If the Page 03A VOICE "Assign" setting is **Mono**, this setting will be ignored.

C: Split Point..... [C-1...G9]

Specify the keyboard location (split point) at which timbres 1 and 2 will be divided.
You can also change this by holding down the [EDIT] key and playing a note on the keyboard where you want the timbres to be split.
This parameter will be displayed and can be set only when "Mode" is **Split**.

D: Scale .....[Equal Temp...User Scale]

This selects the scale type of the program. You can select from ten scale types.

Equal Temp
This is the equal temperament that is used for most music. Each semitone is spaced an equal pitch distance apart.

Pure Major
This is a pure major temperament. Major chords played in the key specified by "Scale Key" will be perfectly in tune.

Pure Minor
This is a pure minor temperament. Minor chords played in the key specified by "Scale Key" will be perfectly in tune.

Arabic
This is a scale used in Arabic music. It includes the quarter-tone scale used in Arabic music.

Pythagorea
This is the Pythagorean scale, which is based on ancient Greek musical theory and is especially effective for playing melodies.

Werckmeist
This is the Werckmeister temperament, an equal-tempered scale used in the later Baroque period.

Kirnberger
This is the Kirnberger temperament, created in the 18th century and used mainly for tuning harpsichords.

Slendro
This is the Slendro scale, an Indonesian gamelan scale that divides the octave into five notes. If the "Scale Key" is **C**, use the C, D, F, G, and A notes.

Pelog
This is the Pelog scale, an Indonesian gamelan scale that divides the octave into seven notes. If the "Scale Key" is **C**, use the C, D, E, F, G, A, and B notes

User Scale
This will be the scale that was specified in Global mode Page 7A: User Scale.

E: Scale Key.....[C...B]
Specify the key (tonic) that will be the basis of the scale selected by "Scale."

2. NAME (Program Name)

Page02: NAME

A: Name ..... [! ...←]
Specify the name of the program.
Use the CURSOR[◄][►] keys, the [+/YES] [–/NO] keys, the [EDIT] key, and the sixteen knobs to specify the name.
For the procedure, refer to p.29 Basic Guide, Edit section "Changing the program name."

Available characters

```
 !"#$%&'()*+,-./0123456789:;<=>?@
ABCDEFGHIJKLMNOPQRSTUVWXYZ[¥]^_`
abcdefghijklmnopqrstuvwxyz{|}→←
```

3. SYNTH Parameters

These are the parameters for synth programs (i.e., programs whose Page 01A: COMMON "Mode" is **Single/Dual/Split**). In the case of **Dual/Split**, use the front panel TMIBRE SELECT [SELECT] key to switch between the timbres for editing.

■ VOICE

These parameters specify how the timbre will be sounded, and set the MIDI channel.

Page03: VOICE

A: Assign .....[Mono, Poly, Unison]
Specify how the timbre will be sounded

Mono
The timbre will sound monophonically (single notes).

Poly
The timbre will sound polyphonically. A maximum of four voices (notes) can be played simultaneously.
If "Mode" is **Dual/Split**, each timbre will sound the number of voices specified by "Timbre Voice."

Unison
The timbre will sound in unison.
If "Mode" is **Dual/Split**, each timbre will apply a unison effect with the number of voices specified by "Timbre Voice."

If "Mode" is **Dual/Split** and the maximum polyphony of the timbre ("Timbre Voice") has been set to 1 (note), the timbre will sound monophonically regardless of this setting.

B: MIDI ch .....[GLB, 01...16]
Specify the MIDI transmit/receive channel of each timbre.

GLB
The global MIDI channel (set in Global mode Page 3A: MIDI "MIDI Ch") will be used as the MIDI transmit/receive channel of the timbre. Select **GLB** if you are playing the **MS2000/MS2000R** from its own keyboard or from a connected MIDI keyboard.

01...16
The specified channel will be used as the MIDI transmit/receive channel of the timbre.
When using the **MS2000/MS2000R** with a connected external MIDI sequencer, set the MIDI transmit/receive channel of each timbre to match the MIDI channel of the appropriate track of your MIDI sequencer.
If the channel you select is the same as the global MIDI channel, a "**G**" will be displayed beside the setting.

C: Priority..... [Last, Low, High]
Specify which note on the keyboard will be sounded when you simultaneously play more notes than the number of voices specified for this timbre.

Last
The last-played note will be given priority.

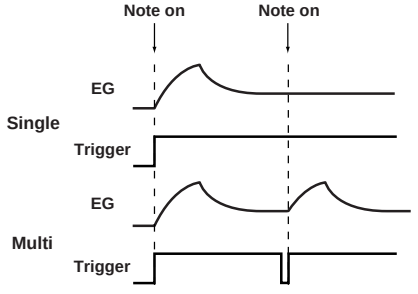
Low
The lowest note on the keyboard will be given priority.

High
The highest note on the keyboard will be given priority.

D: Trigger ..... [Single, Multi]
Select the trigger mode.
This specifies whether retriggering will occur if you continue holding the first-pressed note and play another note.
This parameter will be displayed and can be set only if Page 03A: VOICE "Assign" is set to **Mono/Unison**.

Single
The second and subsequent notes will not retrigger the EG or LFO.
Use this setting when you wish to play legato.

Multi
The EG and LFO will be retriggered each time a note is played.



E: Detune.....[00cent...99cent]

Specify the amount of detuning (difference in pitch) that will be applied to notes sounded simultaneously by the Unison function.
This parameter will be displayed and can be set only if "Assign" is set to **Unison**.

If the "Mode" is **Dual/Split** and the maximum polyphony ("Timbre Voice") of the timbre is 1, this setting will have no effect.

■ PITCH

These are the pitch-related parameters.

Page04: PITCH

A: Transpose.....[–24...+24]

Adjust the pitch of the oscillator in semitone (100 cent) steps. The range is two octaves upward or downward.

note Changes made by the front panel OCTAVE (or BANK/OCTAVE) buttons actually shift the pitches assigned to the keyboard (or keys) in one-octave steps, and do not affect the pitch of the oscillator that is sounding. Nor are such settings saved by the Write operation. If you wish to change the pitch of the oscillator itself, you must use this "Transpose" setting to specify the pitch.

B: Tune .....[–50cent...+50cent]

Adjust the pitch of the oscillator in one-cent steps.
The range is –50 – +50 cents.

C: Vibrato Int.....[–63...+63]

Specify the depth of the vibrato effect that is applied when the modulation wheel (or for the **MS2000R**, the modulation wheel of a connected external MIDI device) is moved to the maximum position.
The LFO2 will apply a vibrato effect to the pitch of the oscillator.

D: Bend Range.....[–12...+12]

Specify the amount of pitch change in semitones that will occur when the pitch wheel is operated. This setting specifies the amount of pitch change that will occur when the pitch bender is moved to the maximum positive (+) position.

E: Portamento < TIME > .....[000...127]

This specifies the speed of the portamento effect (a smooth change in pitch from one note to the next note of a different pitch).
With a setting of **000**, there will be no portamento effect. Increasing this setting from **001** will cause the pitch to change correspondingly slower.

If Page 03: VOICE "Assign" is set to **Mono** or **Unison**, and if "Trigger" is set to **Single**, portamento will not apply to the first-sounded note.

■ OSCILLATOR

These are the parameters that affect the waveform of the oscillator.

Page05: OSC 1

A: Wave < WAVE > .....[Saw...Audio In]

B: Control1 < CONTROL1 > .....[000...127]

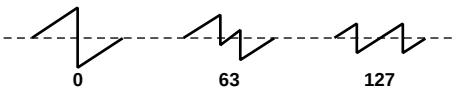
C: Control2 < CONTROL2 > .....[000...127]

"Wave" selects the waveform for OSC1 (oscillator 1). "Control1" and "Control2" set parameters for the selected waveform. The parameters that you set will depend on the selected waveform.

Saw

This is a sawtooth wave, suitable for creating typical analog synthesizer sounds such as synth bass and synth brass.

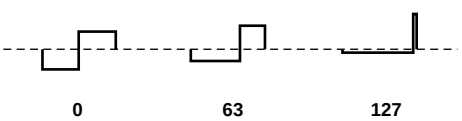
- **Control1**
  Adjusting this value will modify the waveform.
  A setting of **0** will produce a conventional sawtooth wave, and a setting of **127** will produce a sawtooth wave one octave higher.
- **Control2**
  LFO1 is used to apply WFM (wave form modulation) to the waveform specified by "Control 1." The "Control 2" setting specifies the depth of the modulation produced by LFO1.
  By setting the Page 12A: LFO1 "Wave" parameter to ∿ (**Tri**) and adjusting "Frequency," you can create the effect of detuning.



Pulse

This is a pulse wave, suitable for electronic sounds or wind instruments.

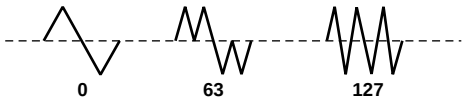
- **Control1**
  This adjusts the pulse width.
  A setting of **0** will produce a square wave, with a tone reminiscent of woodwind instruments such as clarinet. At a setting of **127** the pulse width will be 0, and no sound will be heard.
  By adjusting the pulse width you can produce sounds similar to clavinet or sax.
- **Control2**
  LFO1 is used to apply PWM (pulse width modulation) to the pulse width specified by "Control1." The "Control2" setting specifies the depth of the modulation produced by LFO1.
  By setting the Page 12A: LFO1 "Wave" parameter to ∿ (**Tri**) and adjusting "Frequency," you can make the sound distort.



Tri

This is a triangle, which has weaker overtones and a stronger fundamental than a sawtooth wave or square wave. It is suitable for mellow bass sounds.

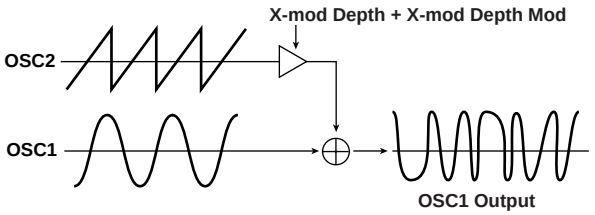
- **Control1**
  You can modify the waveform by adjusting this value.
  A setting of **0** will produce a triangle wave, and a setting of **127** will produce a waveform with a pitch that is one octave and a fifth higher.
- **Control2**
  LFO1 is used to apply WFM (wave form modulation) to the waveform specified by "Control1." The "Control2" setting specifies the depth of the modulation produced by LFO1.



Sin (Cross)

This is basically a sine wave, but oscillator 2 is used to apply cross modulation.
By using oscillator 2 to modulate the frequency of oscillator 1, cross modulation produces a complex overtone structure.

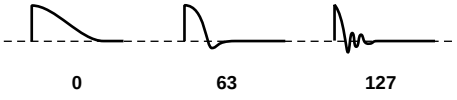
- **Control1**
  Specify the depth of cross modulation.
  At a setting of **0** a sine wave will be produced.
- **Control2**
  LFO1 is used to apply further modulation to the depth of cross modulation that was specified by "Control1." "Control2" specifies the depth of modulation produced by LFO1.



Vox Wave

This simulates a waveform similar to human vocal cords. Even if the oscillator pitch is changed, the frequency spectrum will be maintained, which makes this effective when used for vocal-type sounds or as a vocoder oscillator.
Select **HPF** or **BPF** as the filter, and adjust "Cutoff" to create a vocal-type sound.

- **Control1**
  Adjusting this value will modify the waveform.
- **Control2**
  LFO1 is used to apply modulation to the waveform specified by "Control1." Control2 sets the depth of the modulation applied by LFO1.



DWGS

This is waveform data created by harmonic additive synthesis. 64 types of waveform are provided.

- **Control1**
  This has no effect.
- **Control2**
  This selects the waveform.
  You can select one of the following waveforms.

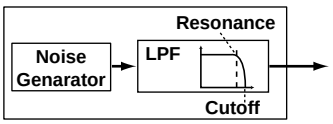
DWGS List

No	Name	No	Name	No	Name
1	SynSine1	24	5thWave1	47	Clav1
2	SynSine2	25	5thWave2	48	Clav2
3	SynSine3	26	5thWave3	49	Guitar1
4	SynSine4	27	Digi1	50	Guitar2
5	SynSine5	28	Digi2	51	Guitar3
6	SynSine6	29	Digi3	52	Bass1
7	SynSine7	30	Digi4	53	Bass2
8	SynBass1	31	Digi5	54	Bass3
9	SynBass2	32	Digi6	55	Bass4
10	SynBass3	33	Digi7	56	Bass5
11	SynBass4	34	Digi8	57	Bell1
12	SynBass5	35	Endless*	58	Bell2
13	SynBass6	36	E.Piano1	59	Bell3
14	SynBass7	37	E.Piano2	60	Bell4
15	SynWave1	38	E.Piano3	61	Voice1
16	SynWave2	39	E.Piano4	62	Voice2
17	SynWave3	40	Organ1	63	Voice3
18	SynWave4	41	Organ2	64	Voice4
19	SynWave5	42	Organ3		
20	SynWave6	43	Organ4		
21	SynWave7	44	Organ5		
22	SynWave8	45	Organ6		
23	SynWave9	46	Organ7		

*: The 35 Endless waveform simulates an endless scale, in which notes one octave apart have the identical pitch. You can play an ascending or descending scale as far as you wish, producing the sensation that a scale of the same pitch is continuing infinitely.

Noise

This generates white noise. Within the oscillator, a LPF (Low Pass Filter) is provided to process the noise.



- **Control1**
  This sets the cutoff frequency of the LPF.
  Adjusting this will affect the noise waveform.
- **Control2**
  This controls the resonance of the LPF.
  If you raise this enough to produce an identifiable pitch, the cutoff frequency will move according to the keyboard location you play, and the change will be heard as a pitch.

note If you want the oscillation produced by resonance to match the reference pitch, set "Control1" to **24**.

Audio In
If this is selected, the waveform input from the AUDIO IN 1 or AUDIO IN 2 jack will be used.
This allows the **MS2000/MS2000R** to be used as an effect processor.

- **Control1**
  This adjusts the volume balance between AUDIO IN 1 and AUDIO IN 2. With a setting of **0** only AUDIO IN 1 will be output. With a setting of **127**, only AUDIO IN 2 will be output.
- **Control2**
  LFO1 is used to apply modulation to the volume balance between AUDIO IN 1 and AUDIO IN 2 that you set by "Control1." The "Control2" setting sets the depth of this modulation produced by LFO1.

Page06: OSC 2

A: Wave ‹ WAVE › ..... [Saw, Squ, Tri]

Select the waveform for oscillator 2.

Saw
A sawtooth wave, suitable for creating typical analog synthesizer sounds such as synth bass and synth brass.

Squ
A square wave, suitable for creating electronic sounds or simulating woodwinds such as clarinet.

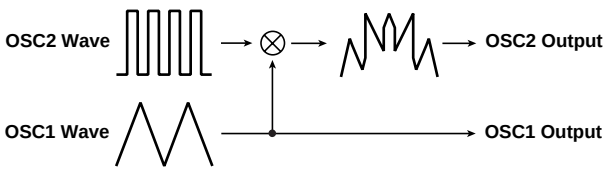
Tri
A triangle wave, with weaker overtones and stronger fundamental than a sawtooth wave or square wave.

B: OSC Mod ‹ OSC MOD ›.....[OFF...RingSync]

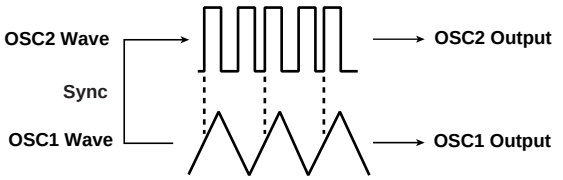
Select the modulation type for the oscillator.

OFF
Output without applying modulation. By adjusting "Semitone" and "Tune," you can produce a spacious detuning effect. For synth bass sounds, set the pitch of oscillators 1 and 2 one octave apart.

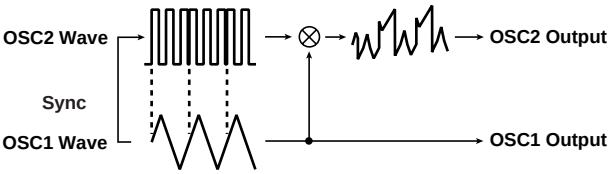
Ring
This modulation generates frequency components that are the sum and difference of the oscillator 1 and 2 waveforms. By adjusting "Semitone" and "Tune" you can create metallic sounds with little sense of pitch. This is effective for sound effects.



Sync
This modulation forcibly synchronizes oscillator 2 to the phase of oscillator 1, forcibly resetting the phase of oscillator 2.
This is effective on synth lead sounds. Use "Semitone" and "Tune" to adjust the overtones.



RingSync
This simultaneously applies Ring and Sync modulation.



C: Semitone ‹ SEMITONE › ..... [–24...+24]

Specify the amount of detune for OSC2 relative to OSC1, in semitone steps.
With a value of **0**, the pitch of OSC2 will be the same as OSC1.
A setting of **±12** produces a pitch difference of one octave, and **±24** produces a pitch difference of two octaves.

D: Tune ‹ TUNE › ..... [–63...+63]

Specify the amount of detune for OSC2 relative to OSC1.
A setting of **±63** produces a pitch difference of ±2 octaves, and **±48** produces a pitch difference of ±1 octave. A value near **0** will make fine adjustments in the pitch.

note If "OSC Mod" is set to **Sync**, adjustments in "Semitone" or "Tune" will change the pitch of the overtones. The pitch of the fundamental will not change.

■ MIXER

These parameters affect the output level of each oscillator. These settings will be the input level to the filter.

Page07: MIXER

A: OSC 1 Level ‹ OSC1 › .....[000...127]

Set the output level of oscillator 1.

B: OSC 2 Level ‹ OSC2 › .....[000...127]

Set the output level of oscillator 2.

C: Noise Level ‹ NOISE › .....[000...127]

Set the output level of the noise generator.

■ FILTER

Here are the filter-related parameters.

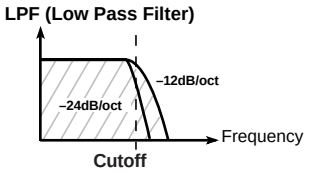
Page08: FILTER

A: Type < FILTER TYPE > ..... [24LPF...12HPF]

Select the filter type.

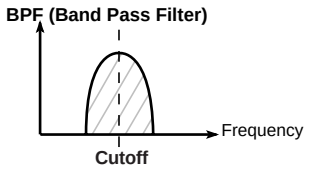
12LPF (–12dB/oct), 24LPF (–24dB/oct)

LPF (Low Pass Filter) is the most commonly used type of file, which allows the frequencies lower than the cutoff frequency to pass and cuts the higher frequencies.
Raising the cutoff frequency ("Cutoff" value) will produce a brighter sound.



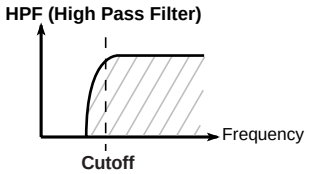
12BPF (–12dB/oct)

BPF (Band Pass Filter) allows a frequency band in the region of the cutoff frequency to pass, and cuts the remaining frequencies. It is used when you wish to emphasize only a specific portion of the frequency range.



12HPF (–12dB/oct)

HPF (High Pass Filter) allows frequencies above the cutoff frequency to pass, and cuts the lower frequencies. Use this when you wish to make the sound thinner. However if the cutoff frequency is raised excessively, the volume will decrease significantly.



B: Cutoff < CUTOFF > .....[000...127]

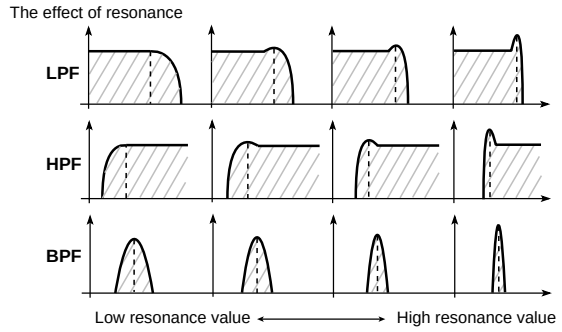
Set the cutoff frequency.
Increasing this value will raise the cutoff frequency.

note "Cutoff" can be varied by time-variant change produced by EG1, by keyboard playing dynamics (velocity), and by note location (keyboard tracking). The depth of each of these effects is set by Page 08D: FILTER "EG 1 Int," Page 08E: FILTER "Vel Sense," and Page 08F: FILTER "KBD Track" respectively.

If the "Cutoff" value is lowered, the volume may be extremely low, or you may hear no sound at all.

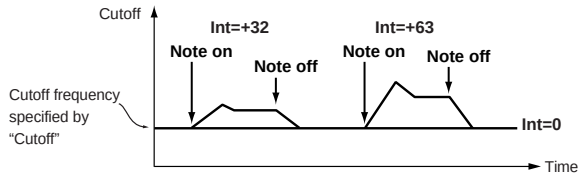
C: Resonance < RESONANCE > .....[000...127]

Set the resonance of the filter.
This will emphasize the overtones near the cutoff frequency specified by "Cutoff," adding a distinctive character to the sound. Increasing this value will increase the effect.

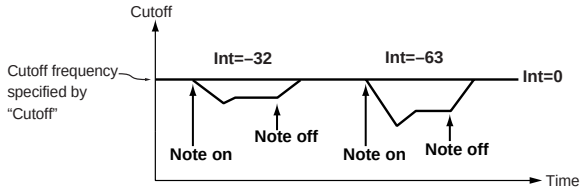


D: EG 1 Int < EG 1 INT > ..... [–63...+63]

This sets the depth at which EG1 will modulate the cutoff frequency to produce time-varying changes in cutoff frequency.
Positive (+) values will produce a correspondingly greater change.



Negative (–) values will produce a correspondingly greater change in the opposite direction.



E: Vel Sense ..... [–63...+63]

This specifies how velocity (keyboard playing dynamics) will affect the cutoff frequency.
With **positive (+)** settings, the cutoff frequency will rise as you play more strongly.
With **negative (–)** settings, the cutoff frequency will fall as you play more strongly.

F: KBD Track < KBD TRACK > ..... [–63...+63]

This specifies how keyboard tracking (the keyboard location that you play) will affect the cutoff frequency.
With **positive (+)** settings, the cutoff frequency will rise as you play upward from the C4 note, and fall as you play downward. With a setting of **+48**, the change in cutoff frequency will be proportionate to the change in pitch.
With **negative (–)** settings, the cutoff frequency will fall as you play upward from the C4 note, and rise as you play downward.
With a setting of **0**, keyboard tracking will not affect the cutoff frequency.

note Keyboard Track operates according to the pitch that is controlled by pitch bend, transpose, and Mod Sequence. It is not affected by pitch changes produced by vibrato or Virtual Patch.

■ AMP (Amplifier)

These are the volume-related parameters.

Page09: AMP

A: Level < LEVEL > .....[000...127]

Adjust the volume of the timbre.
If the "Mode" is **Split/Dual**, this setting will adjust the volume balance between timbre 1 and timbre 2.

B: Panpot < PAN > ..... [L63...CNT...R63]

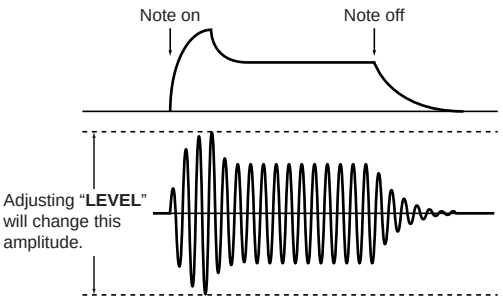
Adjust the sounds (stereo location).

C: Amp Sw < EG 2/GATE >..... [EG 2, Gate]

Select the envelope source that will produce time-variant change in the volume.

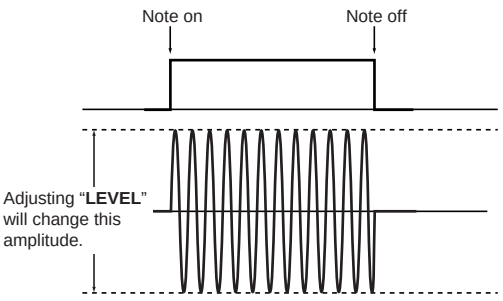
EG 2

If you select EG2 ([EG 2/GATE] key LED is off), the volume will change according to the envelope specified for EG2.



Gate

If you select Gate ([EG 2/GATE] key LED is lit), the volume will remain constant.



D: Distortion < DISTORTION >..... [ON, OFF]

If this is **ON**, distortion will be applied to the output of the timbre.
The depth of distortion can be adjusted by the output level of each oscillator in Page 07: Mixer.

E: Vel Sense .....[–63...+63]

This specifies how velocity (keyboard playing dynamics) will affect the volume.
With **positive (+)** settings, the volume will increase as you play the keyboard harder.
With **negative (–)** settings, the volume will decrease as you play the keyboard harder.

F: KBD Track..... [–63...+63]

Specify how keyboard tracking will affect the volume.
With **positive (+)** settings, the volume will increase as you play above the C4 note on the keyboard, and will decrease as you play below C4.
With **negative (–)** settings, the volume will decrease as you play above the C4 note on the keyboard, and will increase as you play below C4.
With a setting of **0**, keyboard tracking will not affect the volume.

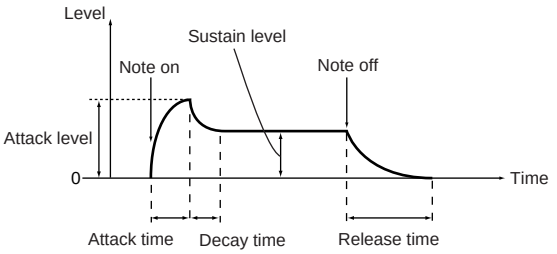
note Keyboard Track operates according to the pitch that is controlled by pitch bend, transpose, and Mod Sequence. It is not affected by pitch changes produced by vibrato or Virtual Patch.

■ EG (Envelope Generator)

These are the parameters for the EG (Envelope Generator), which creates time-varying changes in the sound.
EG1 is internally connected as the envelope source for FILTER "Cutoff."
EG2 is internally connected as the envelope source for AMP "Level."

Page10: EG 1

Page11: EG 2



A: Attack < ATTACK >.....[000...127]

Specify the time from note-on (when the key is pressed) until the attack level (maximum value of the envelope) is reached.

B: Decay < DECAY >.....[000...127]

Specify the time from when the attack level is reached until the sustain level (Sustain) is reached.

C: Sustain < SUSTAIN >.....[000...127]

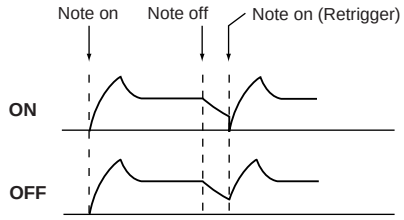
Specify the sustain level.

D: Release < RELEASE >.....[0...127]

Specify the time from note-off (when the key is released) until the level reaches 0.

E: EG Reset ..... [ON, OFF]

Specify whether or not the EG will be reset for the second and subsequent note-on.
If this is **ON**, the second note-on will start from a level of 0.
If this is **OFF**, the note will start from the current EG level.



"EG Reset" is valid in the following cases.

- When Page 03A: VOICE "Assign" is **Poly**.
- When Page 03A: VOICE "Assign" is **Mono** or **Unison** and Page 03D: VOICE "Trigger" is **Multi**.

■ LFO (Low Frequency Oscillator)

These are the LFO (Low Frequency Oscillator) parameters used to create cyclic change.
LFO1 is internally connected as the modulation source for Page 05B: OSC1 "Control 1."
LFO2 is internally connected as the modulation source for oscillator pitch via the modulation wheel (on the **MS2000R**, the modulation wheel of a connected external MIDI device).

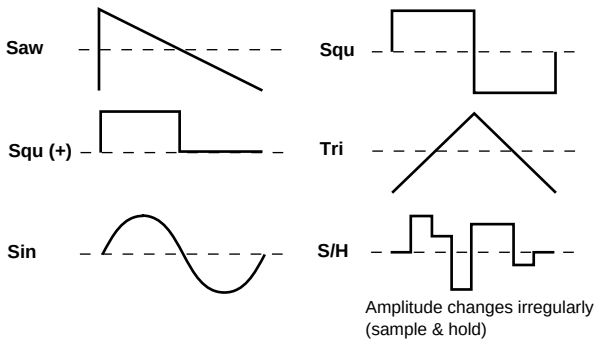
If you have difficulty hearing the effect of the LFO, increase the depth or intensity values of the modulation destination.

Page12: LFO 1

Page13: LFO 2

A: Wave < SELECT > ..... [Saw...S/H]

Select the LFO waveform.
For LFO1 you can select from **Saw**, **Squ**, **Tri**, and **S/H**.
For LFO2 you can select from **Saw**, **Squ (+)**, **Sin**, and **S/H**.

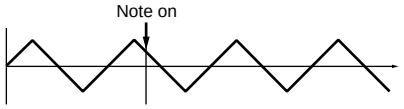


B: Key Sync ..... [OFF, Timbre, Voice]

Specify how the LFO will be applied to a voice when note-on occurs.

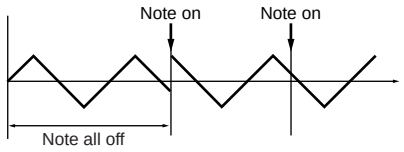
OFF

The LFO phase will not be reset when note-on occurs.



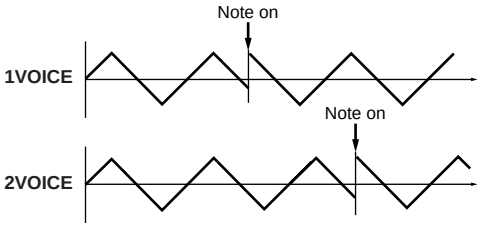
Timbre

The LFO phase will be reset at the first note-on that occurs from a state of no keys pressed. Subsequently, modulation will continue to be applied at the same LFO phase even for subsequent note-on's.



Voice

The LFO phase will be reset at each note-on, and modulation of differing phases will apply to each voice.



C: Tempo Sync .....[ON, OFF]

If this is **ON**, the LFO frequency will synchronize to the tempo or to MIDI clock.
If the Global mode Page 3C: MIDI "Clock" setting is **Internal**, the LFO will synchronize to the tempo specified by the [TEMPO] knob. If the setting is **External**, the LFO will synchronize to the MIDI clock received from an external MIDI device.

If "Tempo Sync" is **ON**, setting Page 14A–17A: PATCH1–4 "Destination" to **LFO2Freq** will have no effect.

D: Frequency < FREQUENCY > .....[000...127]

Specify the frequency of the LFO. Increasing this value will result in a faster frequency.
This parameter will be displayed and can be set if "Tempo Sync" is **OFF**.
If "Tempo Sync" is **ON**, this will indicate "Sync Note."

E: Sync Note.....[1/32...1/1]

Specify the LFO frequency as a proportion of the tempo set by the [TEMPO] knob. (☞P.66 "How "Resolution" and "Sync Note" values correspond to note values")
This parameter will be displayed and can be set if "Tempo Sync" is **ON**.
At a setting of **1/1**, there will be one cycle every four beats.
At a setting of **1/2**, there will be two cycles every four beats.
At a setting of **1/4**, there will be one cycle every beat.
At a setting of **1/8**, there will be two cycles every beat.

■ VIRTUAL PATCH

Virtual Patch allows you to assign modulation sources such as EG and LFO to various parameters.
Four such combinations can be made for each timbre.

Page14: PATCH1

Page15: PATCH2

Page16: PATCH3

Page17: PATCH4

A: Source < SOURCE > .....[EG 1...MIDI 2]

Select a modulation source.

EG 1/EG 2
EG1 or EG2 will be the modulation source.

LFO 1/LFO 2
LFO1 or LFO2 will be the modulation source.

Velocity
Keyboard playing dynamics will be the modulation source.

KBD Trk
Keyboard location (keyboard tracking) will be the modulation source.

note Keyboard Track operates according to the pitch that is controlled by pitch bend, transpose, and Mod Sequence. It is not affected by pitch changes produced by vibrato or Virtual Patch.

MIDI 1/MIDI 2
The function specified in Global mode Page 3D: MIDI "MIDI 1" or Page 3E: MIDI "MIDI 2" will be the modulation source.

B: Destination < DESTINATION > ..... [Pitch...LFO2Freq]

Select the parameter (destination) that will be controlled by the modulation.

Pitch
Modulation will apply to the pitch of the entire timbre.

OSC2Ptch
Modulation will apply to the Page 06D: OSC2 "Tune" parameter.

OSC1Ctr1
Modulation will apply to the Page 05B: OSC1 "Control 1" parameter.

NoiseLvl
Modulation will apply to the Page 07C: MIXER "NoiseLevel" parameter.

Cutoff
Modulation will apply to the Page 08B: FILTER "Cutoff" parameter.

Amp
Modulation will apply to the Page 09A: AMP "Level" parameter.

Pan
Modulation will apply to the Page 09B: AMP "Panpot" parameter.

LFO2 Freq
Modulation will apply to the Page 13D: LFO2 "Frequency" parameter.

If LFO "Tempo Sync" is **ON**, selecting **LFO2Freq** will have no effect.

C: Intensity < PATCH > ..... [–63...+63]

Specify the depth of the effect produced by the modulation source.
With a setting of **0**, there will be no modulation.

■ MOD SEQUENCE

These are the sequence-related parameters.

Page18: SEQ COMMON

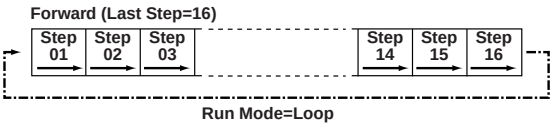
A: Last Step .....[01...16]

Specify the sequence length (maximum number of steps).

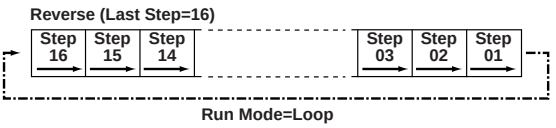
B: Seq Type .....[Forward...Alt 2]

Specify the sequence type (sequence playback direction)

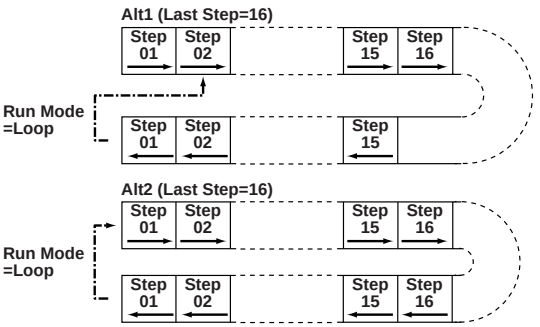
Forward
Play back from the first step (Step 01).



Reverse
Play back in reverse, from the last step (the value specified by "Last Step").



Alt 1/Alt 2
Alternately play back in Forward and Reverse.



note During Motion Rec, the sequence will always play in **Forward** mode.

C: Run Mode.....[1Shot, Loop]

Specify whether the sequence will be looped for playback.

1 Shot
The sequence will play back for only one cycle, and will hold the value of the last step.

Loop
The sequence will play back as a loop, using the sequence type specified by "Seq Type."

note During Motion Rec, the sequence will always play back in **Loop** mode.

D: Key Sync .....[OFF, Timbre, Voice]

Specify how the sequence will be reset when note-on occurs (when a key is played).

OFF
The sequence will not be reset when note-on occurs.

Timbre
At the first note-on that occurs from a condition of all notes off, the sequence will be reset for the timbre that is sounding.
In the case of a **Split** program, the timbre that is assigned to the key for which the note-on occurred will be reset.

Voice
Reset will occur for each voice for which there is a note-on.

note If the sequence and the arpeggiator are both on, you should set this parameter to either **OFF** or **Timbre**. If you select **Voice**, the sequence will be reset each time the arpeggiator sounds. If you select **Timbre**, the sequence will be reset at each chord change.

E: Resolution.....[1/48...1/1]

Specify the sequence playback speed as a proportion of the tempo set by the [TEMPO] knob (or MIDI clock). (☞P.66 "How "Resolution" and "Sync Note" values correspond to note values")
At a setting of **1/1**, the sequence will advance one step every four beats.
At a setting of **1/2**, the sequence will advance one step every two beats.
At a setting of **1/4**, the sequence will advance one step every beat.
At a setting of **1/8**, the sequence will advance two steps every beat.
At a setting of **1/16,** the sequence will advance four steps every beat.
At a setting of **1/32,** the sequence will advance eight steps every beat.

Page19: SEQ1

Page20: SEQ2

Page21: SEQ3

A: Knob .....[None, Pitch...Patch4 Int]

Select the parameter that will be recorded in the sequence.

None
The sequence will have no effect on anything.

Pitch
The sequence will modify the overall pitch of the oscillator in a range of ±24 semitones.

Step Length
The sequence will modify the length of each step as specified by SEQ COMMON "Resolution" in a range of ±6.

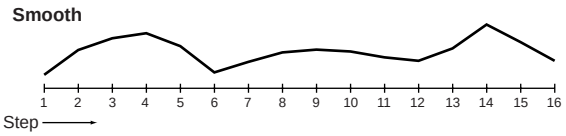
Other
The sequence will modify the value of the corresponding parameter assigned to a panel knob, in a range of ±63 (or ±24 in the case of **OSC2 Semi**).

note If the same parameter is specified for two or more sequences, an "*" will be displayed in the upper right of the LCD screen, and the assignment to the higher-numbered sequence (SEQ3 > SEQ2 > SEQ1) will take priority.

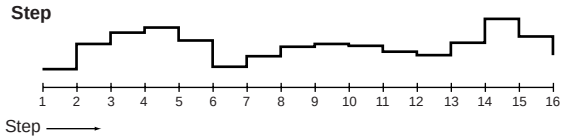
B: Motion ..... [Smooth, Step]

Select how change will occur when the sequence is played back.

Smooth
The value recorded at each step will change in a smooth linear fashion.

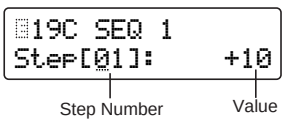


Step
The recorded value will be held until the next step is played.



C: Step Value

Here you can modify the sequence data that is recorded in each step.
To modify the data you can use the SEQ EDIT [SELECT] key and the sixteen knobs, or the CURSOR[◄][►] keys and the [+/YES] [–/NO] keys.



Step Number.....[01...16]

Specify the step.

Value ..... [–06...+06, –24...+24, –63...+63]

Modify the value that is recorded at each step.
These values are the amount of change that will be applied to the value of the parameter that is assigned to the sequence.

–06...+06
This is the range when "Knob" is set to **Step Length**.

–24...+24
This is the range when "Knob" is set to **Pitch** or **OSC2 Semi**.

–63...+63
This is the range for settings other than the above.

■ EFFECTS

These are the effect-related parameters.

Page22: MOD FX

A: Type..... [Cho/Flg, Ensemble, Phaser]

Select the effect type.

Cho/Flg
This effect modulates the delay time of the input signal to add depth and warmth to the sound. Increasing the "Depth" value will produce a flanger effect.

Ensemble
This effect uses multiple chorus units to add three-dimensional depth and spaciousness to the sound.

Phaser
This effect modulates the phase of the sound to create a twisting sensation.

B: LFO Speed < SPEED > .....[000...127]

Specify the speed of the LFO inside the modulation effect.

C: Depth < DEPTH/FEEDBACK > .....[000...127]

Specify the modulation depth and amount of feedback. Increasing this value will deepen the modulation effect and also increase the amount of feedback. If you do not wish to apply the effect, set this to **000**.

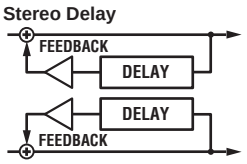
Excessively high settings of this parameter may cause the output to be distorted.

Page23: DELAY FX

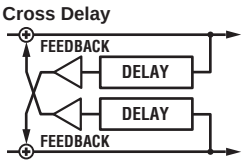
A: Type..... [StereoDelay...L/R Delay]

Select the delay type.

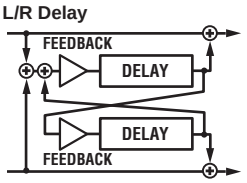
StereoDelay
This is a stereo delay.



CrossDelay
This is a stereo delay where the left and right channels of feedback are interchanged. On **Dual** programs, it is effective to set the panpot of the two timbres to left and right respectively.



L/R Delay
This is a delay where the delay sound is output to left and right alternately.



B: Tempo Sync .....[ON, OFF]

If this is **ON**, the delay time will synchronize to the tempo. If the Global mode Page 3C: MIDI "Clock" setting is **Internal**, the delay time will synchronize to the tempo set by the [TEMPO] knob. If it is **External**, the delay time will synchronize to the MIDI clock received from an external MIDI device.

C: Delay Time < TIME > .....[000...127]

Set the delay time.
This parameter will be displayed and can be set only if "Tempo Sync" is **OFF**.

C: Sync Note ..... [1/32...1/1]

Specify the delay time as a proportion of the tempo set by the [TEMPO] knob. (☞P.66 "How "Resolution" and "Sync Note" values correspond to note values")
This parameter will be displayed and can be set only if "Tempo Sync" is **ON**.

D: Depth < DEPTH/FEEDBACK >.....[000...127]

Specify the delay depth and feedback amount. Increasing this value will make the delay louder and will also increase the amount of feedback.
If you do not wish to apply a delay, set this to **000**.

Excessively high settings of this parameter may cause the output to be distorted.

Page24: EQ

A: LowEQFreq .....[40Hz...1000Hz]

Set the frequency of the low-range equalizer.

B: LowEQGain ..... [–12.0...+12.0]

Set the gain of the low-range equalizer.

C: HiEQFreq ..... [1.00kHz...18.0kHz]

Set the frequency of the high-range equalizer.

D: HiEQGain.....[–12.0...+12.0]

Set the gain of the high-range equalizer.

Excessively raising the equalizer gain parameters may cause the output to be distorted.

■ ARPEGGIATOR

These are the arpeggiator-related parameters.

Page25: ARPEGGIO

ON/OFF..... [ON, OFF]

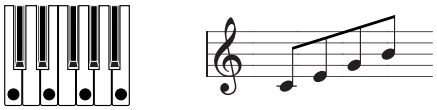
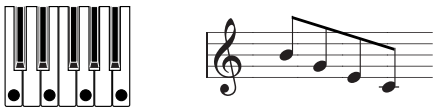
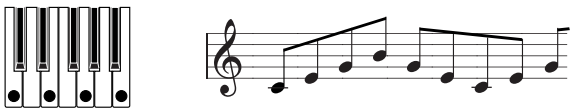
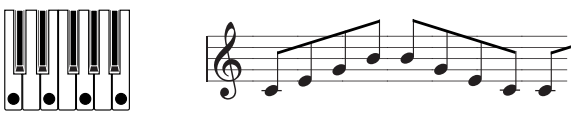
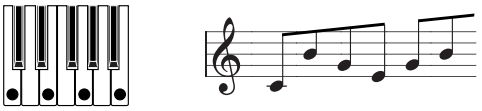
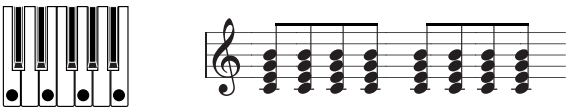
Turn the arpeggiator on/off.
This parameter can be set only by the front panel key. When this is **ON**, the key LED will light.

LATCH ..... [ON, OFF]

Specify how the arpeggiator will operate when you take your hand off of the keyboard.
This parameter can be set only by the front panel key.
If this is **ON** (the key LED will light), the arpeggiator will continue playing even if you take your hand off of the keyboard.
If this is **OFF** (the key LED will go dark), the arpeggiator will stop playing when you take your hand off of the keyboard.

A: Type < TYPE > .....[Up...Trigger]

Select the arpeggio type.

Up
Notes will be played consecutively from low to high pitches.

Down
Notes will be played consecutively from high to low pitches.

Alt 1
Up and Down will be alternated. (The highest and lowest notes will be sounded once.)

Alt 2
Up and Down will be alternated. (The highest and lowest notes will be sounded twice.)

Random
Notes will be played randomly.

Trigger
The notes that you are actually pressing will be sounded at intervals of the trigger. The trigger timing is determined by the "Tempo" setting.
The "Range" setting will be ignored.

note If a greater number of keys are played than the number of timbres specified in Page 01B: COMMON "Timbre Voice" or Page 03A: VOICE "Assign," notes will be played starting at the lowest-pitched note and continuing upward for the maximum number of allowable notes.

B: Range < RANGE >.....[1 Octave...4 Octave]

Specify the octave range in which the arpeggio will be played.
With a setting of **1 Octave**, the arpeggio will be played in a range of 1 octave.
With a setting of **2 Octave**, the arpeggio will be played in a range of 2 octaves.
With a setting of **3 Octave**, the arpeggio will be played in a range of 3 octaves.
With a setting of **4 Octave**, the arpeggio will be played in a range of 4 octaves.

C: Tempo < TEMPO >.....[20...300]

Specify the tempo of the arpeggio.
Increasing this value will speed up the arpeggio tempo.

note If the Global mode Page 3C: MIDI "Clock" setting is **External**, this setting will be ignored.

note This setting will also be the sequence playback speed.

D: Gate Time < GATE >.....[000%...100%]

Specify the note length (gate time) of the arpeggiated notes.
With a setting of **000**, each note will be extremely short.
With set to **100**, each note will continue playing until the next note is triggerd.

E: Target..... [Both...Timbre 2]

Select the timbre(s) that will be played by the arpeggiator.
This parameter will be displayed and can be set only if Page 01A: COMMON "Mode" is set to **Dual/Split**.

Both
Both timbres will be sounded by the arpeggiator.

Timbre 1
Only timbre 1 will be sounded by the arpeggiator.

Timbre 2
Only timbre 2 will be sounded by the arpeggiator.

The MIDI channel of the timbre(s) to be sounded by the arpeggiator must be set to the Global MIDI channel. If the timbre is set to other than the Global MIDI channel, it cannot be sounded by the arpeggiator.

F: Key Sync..... [ON, OFF]

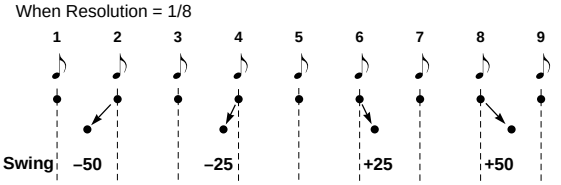
Specify whether the arpeggiator will be synchronized to the keyboard.
If this is **ON**, the arpeggiator will always start from the beginning of the arpeggio pattern when you play the keyboard. If you are performing together with other instruments, you can use this function to ensure that the arpeggio pattern is aligned with the beginning of the measure.

G: Resolution .....[1/24...1/4]

Specify the resolution (spacing of the notes) relative to the tempo specified by "Tempo." (☞P.66 "How "Resolution" and "Sync Note" values correspond to note values")
With a setting of **1/4**, the arpeggio will be played as quarter notes of the specified tempo.
With a setting of **1/6**, the arpeggio will be played as quarter note triplets of the specified tempo.
With a setting of **1/8**, the arpeggio will be played as eighth notes of the specified tempo.
With a setting of **1/12**, the arpeggio will be played as eighth note triplets of the specified tempo.
With a setting of **1/16**, the arpeggio will be played as sixteenth notes of the specified tempo.
With a setting of **1/24**, the arpeggio will be played as sixteenth note triplets of the specified tempo.

H: Swing .....[–100%...+100%]

This skews the timing of the even-numbered notes (counting from the first note) of the arpeggio.



■ UTILITY

Here you can use various utility functions such as copy, initialize, and swap (exchange) to help you edit more efficiently.

Page26: UTILITY

A: InitProgram

This function initializes the settings of the currently selected program (timbre, effect, arpeggiator).
When you initialize a program, its voice mode will be **Single**.

Procedure

① **In LCD Edit mode, press the SELECT [16] key.**
The LCD screen will show Page 26A: UTILITY "InitProgram."

```
26A UTILITY
InitProgram  OK?
```

② **Press the [+/YES] key.**
You will be asked to confirm the initialize operation.

```
26A UTILITY
Are You Sure OK?
```

③ **Press the [+/YES] key once again.**
The program will be initialized, and the display will indicate "Completed."

④ **Press the [EXIT] key.**
You will return to the first screen of the "InitProgram" function.

B: InitTimbre

This function initializes the settings of the currently selected timbre.

Procedure

① **In LCD Edit mode, press the SELECT [16] key, and then press the CURSOR [►] key once.**
The LCD screen will show Page 26B: UTILITY "InitTimbre."

```
26B UTILITY
InitTimbre   OK?
```

② **Press the [+/YES] key.**
You will be asked to confirm the initialize operation.

```
26B UTILITY
Are You Sure OK?
```

③ **Press the [+/YES] key once again.**
The timbre will be initialized, and the display will indicate "Completed."

④ **Press the [EXIT] key.**
You will return to the first screen of the "InitTimbre" function.

C: CopyTimbre

This function copies the setting of another timbre to the currently selected timbre.

Source Program ..... [A01...H16]

Select the copy source program.

Source Timbre .....[1, 2]

Select the copy source timbre.

Procedure

① **In LCD Edit mode, press the SELECT [16] key, and then press the CURSOR [►] key twice.**
The LCD screen will show Page 26C: UTILITY "CopyTimbre."

```
26C UTILITY
CopyTimbre   OK?
```

② **Press the [+/YES] key.**
The LCD screen will show the copy source program (Source Program) and timbre (Source Timbre).

```
26C UTILITY
A01 T:1      OK?
```

Source Program
Source Timbre

③ **Use the [+/YES] [–/NO] keys to select the copy source program.**

④ **Use CURSOR[►] to move the cursor to the copy source timbre.**

⑤ **Use the [+/YES] [–/NO] keys to select the copy source timbre.**

If the copy source program is **Single**, it will not be possible to select the copy source timbre (only timbre 1 is available).

⑥ **Use the CURSOR [►] key to move the cursor to "OK," and press the [+/YES] key.**

You will be asked to confirm the copy function.

```
26C UTILITY
Are You Sure OK?
```

⑦ **Press the [+/YES] key once again.**

The copy operation will be completed, and the display will indicate "Completed."

⑧ **Press the [EXIT] key.**

You will return to the first screen of the "CopyTimbre" function.

D: SwapTimbre

This function swaps (exchanges) the settings of timbres 1 and 2 in the currently selected program.
The swap function cannot be performed for **Single** programs.

Procedure

① **In LCD Edit mode press the SELECT [16] key, and then press the CURSOR [►] key three times.**

The LCD screen will show Page 26D: UTILITY "SwapTimbre."

```
26D UTILITY
SwapTimbre   OK?
```

② **Press the [+/YES] key.**

You will be asked to confirm the swap function.

```
26D UTILITY
Are You Sure OK?
```

③ **Press the [+/YES] key once again.**

The timbres will be swapped, and the display will indicate "Completed."

④ **Press the [EXIT] key**

You will return to the first screen of the "SwapTimbre" function.

E: InitSeq

This function initializes one or all sequences of the currently selected timbre.

InitSeq..... [SEQ1...ALL]

Select the sequence(s) that you wish to initialize.
When you initialize a sequence, the data recorded in that sequence will be erased.

Procedure

① **In LCD Edit mode press the SELECT [16] key, and then press the CURSOR [►] key four times.**

The LCD screen will show Page 26E: UTILITY "InitSeq."

```
26E UTILITY
InitSeq      OK?
```

② **Press the [+/YES] key.**

The LCD screen will show the sequence to be initialized (InitSeq).

```
26E UTILITY
SEQ1         OK?
```

③ **Use the [+/YES] [–/NO] keys to select the sequence that you wish to initialize.**

If you select ALL, all sequences (SEQ 1–3) of the timbre will be initialized.

④ **Use CURSOR [►] to move the cursor to "OK," and press the [+/YES] key.**

You will be asked to confirm the initialize function.

```
26E UTILITY
Are You Sure OK?
```

⑤ **Press the [+/YES] key once again.**

The sequence(s) will be initialized, and the display will indicate "Completed."

⑥ **Press the [EXIT] key.**

You will return to the first screen of the "InitSeq" function.

F: CopySeq

This function copies sequence data from another timbre to the currently selected timbre.

Source Program..... [A01...H16]

Select the copy source program.

Source Timbre .....[1, 2]

Select the copy source timbre.

Source Seq ..... [S1...S3]

Select the copy source sequence.

Destination Seq .....[1...3]

Select the copy destination sequence.

Procedure

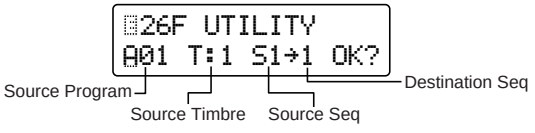
① **In LCD Edit mode, press the SELECT [16] key and then press the CURSOR [►] key five times.**

The LCD screen will show Page 26F: UTILITY "CopySeq."

```
26F UTILITY
CopySeq      OK?
```

② **Press the [+/YES] key.**

The LCD screen will indicate the copy source program (Source Program), timbre (Source Timbre), sequence (Source Seq), and copy destination sequence (Destination Seq).



③ **Use the [+/YES] [–/NO] keys to select the copy source program.**

④ **Use the CURSOR [►] key to move the cursor to the copy source timbre.**

⑤ **Use the [+/YES] [–/NO] keys to select the copy source timbre.**

If the copy source program is **Single**, it is not possible to select the copy source timbre (only timbre 1 is available).

⑥ **Use the CURSOR [►] key to move the cursor to the copy source sequence.**

⑦ **Use the [+/YES] [–/NO] keys to select the copy source sequence.**

⑧ **Use the CURSOR [►] to move the cursor to the copy destination sequence.**

⑨ **Use the [+/YES] [–/NO] keys to select the copy destination sequence.**

⑩ **Use the CURSOR [►] key to move the cursor to "OK," and press the [+/YES] key.**

You will be asked to confirm the copy function.

```
26F UTILITY
Are You Sure OK?
```

⑪ **Press the [+/YES] key once again.**

The copy will be completed, and the display will indicate "Completed."

⑫ **Press the [EXIT] key.**

You will return to the first screen of the "CopySeq" function.

G: CopySeqAll

This function copies all sequence data and settings from another timbre to the currently selected timbre.

Source Program.....[A01...H16]

Select the copy source program.

Source Timbre.....[1, 2]

Select the copy source timbre.

Procedure

① **In LCD Edit mode, press the SELECT [16] key and then press the CURSOR [►] key six times.**

The LCD screen will show Page 26G: UTILITY "CopySeqAll."

```
26G UTILITY
CopySeqAll   OK?
```

② **Press the [+/YES] key.**

The LCD screen will indicate the copy source program (Source Program) and timbre (Source Timbre).

```
26G UTILITY
A01 T:1      OK?
```

Source Program Source Timbre

③ **Use the [+/YES] [–/NO] keys to select the copy source program.**

④ **Use CURSOR [►] to move the cursor to the copy source timbre.**

⑤ **Use the [+/YES] [–/NO] keys to select the copy source timbre.**

If you selected a **Single** program as the copy source, it is not possible to select the copy source timbre (only timbre 1 is available).

⑥ **Use the CURSOR [►] key to move the cursor to "OK," and press the [+/YES] key.**

You will be asked to confirm the copy function.

```
26G UTILITY
Are You Sure OK?
```

⑦ **Press the [+/YES] key once again.**

The copy will be completed, and the display will indicate "Completed."

⑧ **Press the [EXIT] key.**

You will return to the first screen of the "CopySeqAll" function.

H: SwapSeq

This function swaps the sequences of the currently selected timbre.

Swap Seq .....[1...3]

Select the sequence that you wish to swap.

Procedure

① **In LCD Edit mode, press the SELECT [16] key and then press the CURSOR [►] key seven times.**

The LCD screen will show Page 26H: UTILITY "SwapSeq."

```
26H UTILITY
SwapSeq      OK?
```

② **Press the [+/YES] key.**

The LCD screen will show the sequences that will be swapped (SwapSeq).

```
26H UTILITY
  S:1 <> S:2 OK?
```

SwapSeq

③ **Use the [+/YES] [–/NO] keys and the CURSOR [►] key to specify the sequences that will be swapped.**

④ **Use the CURSOR [►] key to move the cursor to "OK," and press the [+/YES] key.**

You will be asked to confirm the swap function.

```
26H UTILITY
Are You Sure OK?
```

⑤ **Press the [+/YES] key once again.**

The copy will be completed, and the display will indicate "Completed."

⑥ **Press the [EXIT] key.**

You will return to the first screen of the "SwapSeq" function.

4. Vocoder Parameters

These are the parameters for a vocoder program (Page 01A: COMMON "Mode" = **Vocoder**).

■ VOICE

Page03: VOICE

These parameters are the same as for **Single** synth programs. Refer to "3. SYNTH Parameters."

■ PITCH

Page04: PITCH

These parameters are the same as for synth programs. Refer to "3. SYNTH Parameters."

■ OSCILLATOR

Page05: OSC 1

A: Wave < WAVE > .....[Saw...Audio In]

B: Control1 < CONTROL 1 > .....[000...127]

C: Control2 < CONTROL 2 > .....[000...127]

Select the waveform of the carrier.

Saw, Pulse, Tri, VoxWave, DWGS, Noise, Audio In
Refer to "3. SYNTH Parameters" Page 05: OSC 1.

Sin
A sine wave will be used. No cross modulation will be applied.

- **Control1**
  Adjusting the value will modify the waveform.
- **Control2**
  LFO1 will apply WFM (wave form modulation) to the waveform specified by "Control1." The depth of the LFO1 modulation is adjusted by "Control2."

■ AUDIO IN 2

These are the parameters for the input from the AUDIO IN 2 jack.

Page06: AUDIO IN 2

A: Gate Sense .....[000...127]

Specify the speed of the gate that will be applied to the audio signal input from the AUDIO IN 2 jack according to the "Threshold" setting.
Lower values for this setting will make the gate operate more quickly, causing the vocoder sound to decay more quickly.
Higher values for this setting will make the gate operate more gradually, causing the vocoder sound to have a longer decay.

note If the "Threshold" value is high, this effect will apply more readily. If the value is 0, there will be no effect.

B: Threshold < THRESHOLD >.....[000...127]

Specify the level at which the audio signal from the AUDIO IN 2 jack will be silenced.
Increasing this value will cause the audio signal to be silenced. This lets you eliminate any noise that might be heard when no input signal is present.

If this setting is set excessively high, the audio signal will also be cut, and it will be difficult for the vocoder effect to apply.

C: HPF Level < HPF LEVEL >.....[000...127]

Adjust the amount of the high-frequency portion of the audio signal input from the AUDIO IN 2 jack that will be mixed into the output of the vocoder.
Increasing this value will emphasize the portion that corresponds to the consonants of speech or singing.

D: HPF Gate ..... [ENA, DIS]

When mixing the high-frequency portion of the audio signal input from the AUDIO IN 2 jack into the output of the vocoder, this setting specifies whether this high-frequency portion will be output only while the internal tone generator is sounding, or whether it will always be output whenever there is an input to the AUDIO IN 2 jack.

ENA
Use this setting when you wish to apply the vocoder effect only to the internal tone generator, or when you wish to use the **MS2000/MS2000R** as a tone generator and connect the output of another synthesizer to the AUDIO IN 1 jack.

DIS
This setting is effective when you have connected a guitar via an effects unit etc. to the AUDIO IN 1 jack.

■ MIXER

Page07: MIXER

This sets the output level of the carrier. The level you specify here will be the input level to the band-pass filter of the carrier.

A: OSC 1 Level ‹ OSC 1 › .....[000...127]
Specify the output level of OSC1 (carrier).

B: Inst Level ‹ INST ›.....[000...127]
Specify the output level of the signal that is input from the AUDIO IN 1 jack.

C: Noise Level ‹ NOISE ›.....[000...127]
Specify the output level of the noise generator.

■ FILTER

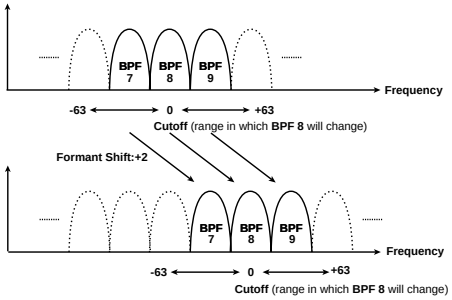
These are the parameters for the band-pass filter of the carrier.

Page08: FILTER

A: Formant Shift ‹ FORMANT SHIFT ›.....[–2...+2]
This shifts the cutoff frequency of each band-pass filter of the carrier, allowing you to dramatically modify the character of the vocoder output.

B: Cutoff ‹ CUTOFF ›.....[–63...+63]
This continuously shifts the cutoff frequency of each band-pass filter of the carrier.

How "Formant Shift" and "Cutoff" are related
When "Formant Shift" = **0** and "Cutoff" = **0**, the frequency response will be as specified by the cutoff frequencies of each band-pass filter of the modulator.
Adjustments to "Cutoff" will smoothly shift the frequency response
The shift in frequency response caused by "Formant Shift" is smoothly varied by "Cutoff" in two stages above and two stages below (four stages above and below when used in conjunction with "Formant Shift").



C: Resonance ‹ RESONANCE ›.....[000...127]
Specify the amount of resonance for each band-pass filter. Increasing this value will emphasize the regions near each cutoff frequency.

D: Mod Src ‹ FC MOD SOURCE ›.....[EG 1...MIDI 2]
Select the modulation source that will be applied to "Cutoff."
The selectable modulation sources are the same as for the Virtual Patch modulation sources (Source) for synth parameters.
Refer to p.42 "■ VIRTUAL PATCH."

E: Mod Int ‹ FC MOD INT ›..... [–63...+63]
Specify the depth of the modulation that will be applied to "Cutoff."

F: E.F.Sense ‹ E.F.SENSE ›.....[000...127]
Specify the sensitivity of the envelope follower of the modulator.
With low settings of this parameter, the rise and fall of the signal from the AUDIO IN 2 jack will be detected rapidly.
With high settings of this parameter, the change will become slower, producing a sound with no attack and a long release.
With a setting of **127**, the response of the signal being input at that time will be maintained. Subsequently, the sound will be produced with the response that is being held, regardless of whether or not there is any input.

If you set this to **127** when there is no input signal present there will be no output even if an audio signal is subsequently input.

■ AMP

Page09: AMP

A: Level ‹ LEVEL ›.....[000...127]
Specify the volume level of the internal tone generator (OSC1/NOISE) for the carrier.

B: Direct Level ‹ DIRECT LEVEL ›.....[000...127]
Specify the volume level of the audio that is output directly from the AUDIO IN 2 jack.

C: Distortion ‹ DISTORTION ›.....[ON, OFF]
If this is **ON**, distortion will be applied to the OSC1/NOISE/AUDIO IN 1 signal.

D: Vel Sense ..... [–63...+63]
Specify how velocity (keyboard playing dynamics) will affect the volume.
With **positive (+)** settings, the volume will increase as you play harder.
With **negative (–)** settings, the volume will decrease as you play harder.

E: KBD Track..... [–63...+63]
Specify how keyboard tracking will affect the volume.
With **positive (+)** settings, the volume will increase as you play above the C4 note on the keyboard, and will decrease as you play below C4.
With **negative (–)** settings, the volume will decrease as you play above the C4 note on the keyboard, and will increase as you play below C4.

With a setting of **0**, keyboard tracking will not affect the volume.

note Keyboard Track operates according to the pitch that is controlled by pitch bend, transpose, and Mod Sequence. It is not affected by pitch changes produced by vibrato or Virtual Patch.

■ EG (Envelope Generator)

Page10: EG 1

Page11: EG 2

These parameters are the same as for a synth program.
Refer to "3. SYNTH Parameters."

■ LFO (Low Frequency Oscillator)

Page12: LFO 1

Page13: LFO 2

These parameters are the same as for a synth program.
Refer to "3. SYNTH Parameters."

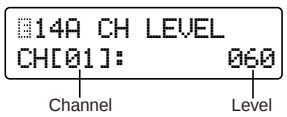
■ CH PARAM

These set the output level and panning (panpot) for each of the sixteen filters of the carrier (synth).
To make settings, use the CH PARAM [SELECT] key and the sixteen knobs, or the CURSOR[◄][►] keys and the [+/YES] [–/NO] keys.

Page14: CH LEVEL

A: Ch Level

Specify the output level for each filter of the carrier.



Channel.....[01...16]

Select the filter for which you wish to make settings.

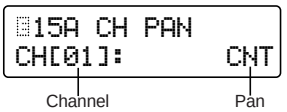
Level .....[000...127]

Specify the output level of the filter.

Page15: CH PAN

A: Ch Pan

Specify the panpot for each filter of the carrier.



Channel .....[01...16]

Select the filter for which you wish to make settings.

Pan .....[L63...CNT...R63]

Specify the panning of each filter.

■ EFFECTS

Page16: MOD FX

Page17: DELAY FX

Page18: EQ

These parameters are the same as for a synth program.
Refer to "3. SYNTH Parameters."

■ ARPEGGIATOR

Page19: ARPEGGIO

These parameters are the same as for a synth program.
Refer to "3. SYNTH Parameters."

■ UTILITY

Page20: UTILITY

A: InitProgram

This function initializes the settings of the currently selected vocoder program (program common, timbre, effect, arpeggiator).
When a vocoder program is initialized, its voice mode will remain at **Vocoder**.
For the procedure refer to "3. SYNTH Parameters."

B: InitTimbre

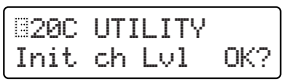
Refer to "3. SYNTH Parameters."

C: Init ch Lvl

This function initializes the output level for each filter of the carrier.
When the levels are initialized, the output level value will be **127**.

Procedure

① **Press the SELECT [16] key, and then press the CURSOR [►] key twice.**
The LCD screen will show Page 20C: UTILITY "Init ch Lvl."



② **Press the [+/YES] key.**
You will be asked to confirm the initialize operation.

③ **Press the [+/YES] key once again.**
The output levels will be initialized, and the display will indicate "Completed."

④ **Press the [EXIT] key.**
You will return to the first screen of the "Init ch Lvl" function.

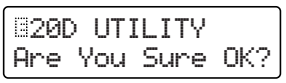
D: Init ch Pan

This function initializes the panpot for each filter of the carrier.
When this is done, the panpot of each filter will be at **CNT** (center output).

Procedure

① **Press the SELECT [16] key, and then press the CURSOR [►] key three times.**
The LCD screen will show Page 20D: UTILITY "Init ch Pan."

② **Press the [+/YES] key.**
You will be asked to confirm the initialize operation.



③ **Press the [+/YES] key once again.**
The output levels will be initialized, and the display will indicate "Completed."

④ **Press the [EXIT] key.**
You will return to the first screen of the "Init ch Pan" function.

Global parameters

These parameters affect the entire **MS2000/MS2000R**.
To set these parameters, press the **[GLOBAL]** key. If you wish to save the settings you make, you must perform the Write operation (Basic Guide, Edit section p.30).

Page1: GLOBAL

A: Mst.Tune.....[430.0Hz...450.0Hz]

This adjusts the overall pitch of the entire **MS2000/MS2000R** in 0.1 Hz steps, relative to the reference pitch of A4 (middle A).
Use this when you need to tune the pitch of the **MS2000/MS2000R** to other instruments.

B: Transpose .....[–12...+12]

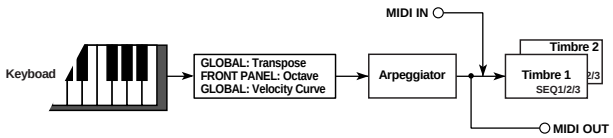
This adjusts the overall pitch of the entire **MS2000/MS2000R** in semitone steps (100 cents).
Use this when you wish to transpose to suit the song you are playing.
The range covers one octave upward or downward.

C: Position ..... [PostKBD, Pre TG]

This specifies the MIDI IN/OUT routing inside the **MS2000/MS2000R**.
This setting will affect how MIDI data is transmitted and received, and how arpeggiator data is handled.

PostKBD

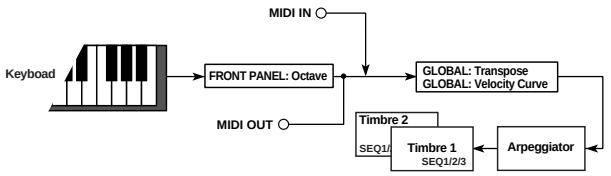
Data received at the MIDI IN connector will be sent to the timbre(s) without being affected by the **MS2000/MS2000R**'s internal settings or the arpeggiator.
The data outputed by the keyboard of the **MS2000** or the SELECT [1]–[16] keys of the **MS2000R** will be converted by the internal settings, routed through the arpeggiator, and sent to the timbre(s) and to the MIDI OUT connector.



If you have selected the **PostKBD** setting, and played the keyboard (or the SELECT [1]–[16] keys) with both the arpeggiator and sequence turned on and used an external sequencer to record the MIDI data that was produced, the sequence reset method will change when this data is played back. If you wish to use this type of application, use the **Pre TG** setting.

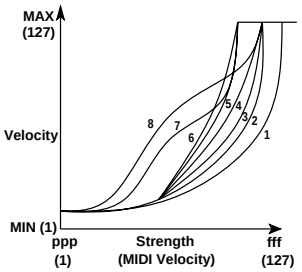
Pre TG

Data received at the MIDI IN connector will be converted according to the internal settings, routed through the arpeggiator, and then sent to the timbre(s).
The data that is output by the keyboard of the **MS2000** or the SELECT [1]–[16] keys of the **MS2000R** will be sent to the MIDI OUT connector without being affected by the arpeggiator or by internal settings other than Octave. Data sent to the timbre(s) will be converted according to the internal settings, and routed through the arpeggiator before being sent.



D: Vel.Curve ..... [1...8, CONST]

Select how velocity (keyboard playing dynamics) will affect volume and tone. The results of this setting are affected by the "Position" setting.



1: This curve produces change for strongly played notes.
2, 3: |
4: The normal curve.
5: |
6: This curve produces change even if notes are not played very strongly.
7: This curve produces little change for medium-strength notes, and a fairly consistent effect.
8: This curve produces little change for medium-strength notes, and a fairly consistent effect (flatter than curve 7).

note Curves **7** and **8** produce little change for medium-strength notes, and are thus suitable when you do not need velocity sensitivity or when you want the sound to be more consistent; however, these curves are difficult to control because they produce significant change for softly-played notes.
Select a curve that is appropriate for your playing style and the effect that you wish to obtain.

CONST

All notes will sound at the velocity value specified by "Vel.Value."

E: Vel.Value .....[001...127]

This will be displayed and can be set if "Vel.Curve" is **CONST**.
All notes will be sounded at the velocity value you specify. Variations in playing dynamics will have no effect on volume or tone.

F: AudioInThru.....[ON, OFF]

If this is **ON**, the signal that is input from AUDIO IN 1/2 will be output without change. This lets you check that the input to the AUDIO IN 1/2 jacks is correct.

This setting is not memorized by the Write operation. When the power is turned on, it will always be turned **OFF**.

Page2: MEMORY

A: Protect ..... [ON, OFF]

Specify whether or not the internal memory will be protected.

ON

The following writing operations will be prohibited.

- Writing a program
- Loading the factory data
- Receiving a data dump

OFF

Data can be written to internal memory.

B: PageMemory ..... [ON, OFF]

Make settings for the page memory function.

ON

When you exit LCD Edit mode or Global mode to return to Program Play mode, and then re-enter the previous mode, the page that had been selected when you exited the mode will appear in the LCD screen.

OFF

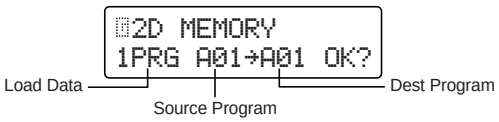
When you enter LCD Edit mode or Global mode, the LCD screen will show the first page of the mode.
In LCD Edit mode, Page 01A: COMMON "Mode" will be displayed. In Global mode, Page 1A: GLOBAL "Mst.Tune" will be displayed.

C: PageJump ..... [ON, OFF]

If this is **ON**, operating the front panel knobs in LCD Edit mode will cause the LCD screen to switch to that parameter.

D: Preload

This operation loads the factory settings.
For the loading procedure, refer to p.30 Basic Guide, Edit section "2. Restoring settings to their factory state."



Load data ..... [1PRG...GLOBAL]

1PRG

Load only data for one program.

PROG

Load data for all programs (128 programs).

GLOBAL

Load global data.

Source Program ..... [A01...H16]

Select the number of the program that you wish to load.
This will be displayed and can be set only if **1PRG** is selected for "Load Data."

Dest Program ..... [A01...H16]

Specify the loading destination for the program selected by "Source Program."
This will be displayed and can be set only if **1PRG** is selected for "Load Data."

Page3: MIDI

A: MIDI Ch ..... [01...16]

Specify the global MIDI channel.
When you wish to transmit program changes or system exclusive messages via MIDI, set the global MIDI channel to match the MIDI channel of the connected MIDI device.

note If you wish to receive performance data on the global MIDI channel, set the MIDI channel of the timbre to match the global MIDI channel. (Set the LCD Edit mode Page 03B: VOICE "MIDI ch" parameter to **GLB**.)

B: Local ..... [ON, OFF]

Switch the local on/off setting.

ON

Select this setting when you are using the **MS2000/MS2000R** by itself.

OFF

With this setting, controllers such as the keyboard (or for the **MS200R**, the SELECT [1]–[16] keys) and modulation wheel will be internally disconnected from the tone generator section.
This setting prevents notes from being sounded in duplicate when an external sequencer is connected and the performance data is echoed back from the external sequencer. (Echo back is a when the performance data transmitted by playing the **MS2000/MS2000R** is re-transmitted back to the **MS2000/MS2000R** from the sequencer.)

C: Clock ..... [Internal...Auto]

Make settings for synchronization with a connected external MIDI device.

Internal

The **MS2000/MS2000R** will be the master (the controlling device). A connected external MIDI device (e.g., sequencer) will synchronize to the sequence or arpeggiator of the **MS2000/MS2000R**.
If "Tempo Sync" is turned **ON** for LFO1 and LFO2, the LFO frequency will synchronize to the tempo specified by the [TEMPO] knob.

External

The **MS2000/MS2000R** will be the slave (the controlled device). The **MS2000/MS2000R**'s sequences and arpeggiator will synchronize to the MIDI clock from a connected external MIDI device.
If "Tempo Sync" is turned **ON** for LFO1 and LFO2, the LFO frequency will synchronize to the MIDI clock from the external MIDI device.

Auto

When MIDI clock data is input from a connected external MIDI device, the **MS2000/MS2000R** will automatically operate with the **External** setting. Normally, it will operate with the **Internal** setting.

When making settings for synchronizing external MIDI devices, refer to the owner's manuals for the devices you are using.

D: MIDI1 ..... [P.Bend...CC#95]

Select the function that will be assigned to modulation source MIDI 1 of the virtual patch. (With the factory settings, this is **P.Bend**.)

E: MIDI2 .....[P.Bend...CC#95]

Select the function that will be assigned to modulation source MIDI 2 of the virtual patch. (With the factory settings, this is **CC#01**.)

note If the specified setting is assigned to another parameter, an "*" will be shown in the right of the upper line of the LCD screen.

F: MIDI Dump..... [1PROG...ALL]

Select the data that you wish to dump.
This function transmits the **MS2000/MS2000R**'s programs and global settings to a MIDI data filer or computer connected to the MIDI OUT connector. The same data can also be transmitted to another **MS2000/MS2000R**.
For the dump procedure, refer to p.31 Basic Guide, Edit section "4. Saving data on an external device (Data Dump)."
To receive this data, set Global mode Page 4D: MIDI FILTER "SystemEx" to **ENA**, and you will be able to receive a data dump at any time.
Data is transmitted and received on the global MIDI channel.

1PROG
Data for the currently selected program will be transmitted.

PROG
Data for all programs will be transmitted.

GLOBAL
Global data will be transmitted.

ALL
All programs and global data will be transmitted.
The following times are required in order to perform the various types of data dump.

Data to dump	Data size (Bytes)	Time required (seconds)
1PROG	291	Less than one second
PROG	37,157	approximately 15
GLOBAL	227	Less than one second
ALL	37,383	approximately 15

Page4: MIDI FILTER

A: ProgChg.....[DIS, ENA]

Select whether or not program changes will be transmitted and received.

ENA
Program changes will be transmitted and received.

DIS
Program changes will not be transmitted or received.

B: CtrlChg.....[DIS, ENA]

Select whether or not MIDI control changes will be transmitted and received.

ENA
MIDI control changes will be transmitted and received.

DIS
MIDI control changes will not be transmitted or received.

C: P.Bend.....[DIS, ENA]

Select whether or not pitch bend messages will be transmitted and received.

ENA
Pitch bend messages will be transmitted and received.

DIS
Pitch bend messages will not be transmitted or received.

D: SystemEx ..... [DIS, ENA]

Select whether or not MIDI system exclusive messages will be transmitted and received.

ENA
MIDI system exclusive messages will be transmitted and received.

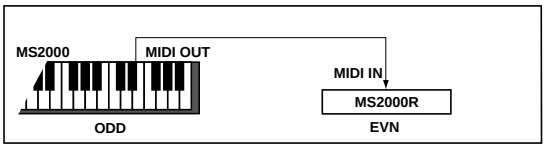
DIS
MIDI system exclusive messages will not be transmitted or received.

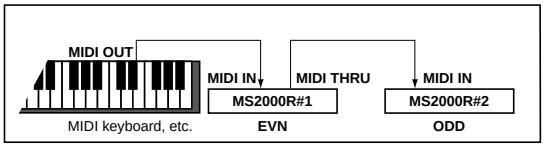
E: NoteRcv.....[ALL...ODD]

When note data is received, specify the note numbers (even numbered notes, odd numbered notes, all notes) that will be sounded by the **MS2000/MS2000R**.

ALL
All note numbers will be received. Normally you will leave this set at **ALL**. If you have connected an **MS2000** or an addition **MS2000R** to an **MS2000R** to increase the polyphony, set one unit to **EVN** and the other to **ODD** so that either one or the other will sound.

EVN or **ODD** are valid only if the program has an "Assign" setting (LCD Edit mode Page 03A: VOICE) of **Poly**.





note There is no effect on the MIDI data that is received.

EVN
Even-numbered notes (C, D, E, F#, G#, A#) will be sounded.

ODD
Odd-numbered notes (C#, D#, F, G, A, B) will be sounded.

F: P.Chg

Here you can freely specify the correspondence between the **MS2000/MS2000R**'s program numbers and the incoming MIDI program change numbers.

External .....[000...127]

Select the incoming MIDI program change number.

Internal ..... [A00...H16]

Select the **MS2000/MS2000R** program number.

G: SyncCtrl .....[OFF, CC#00...CC#95]

Select the MIDI control change number that will be transmitted from the MIDI OUT connector when the arpeggiator sends a note-on. (With the factory settings, this is **CC#90**.)

note If the specified number has been specified for another key or knob, an "*" will be displayed in the LCD screen beside "MIDI FILTER."

H: TimbreSelect.....[OFF, CC#00...CC#95]

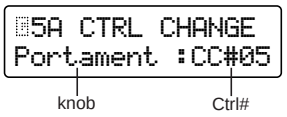
Here you can select the control change number that will be output from the MIDI OUT connector when a timbre is selected in Program Play mode or LCD Edit mode. (With the factory settings, this is **CC#95**.)

note If the specified number has been specified for another key or knob, an "*" will be displayed in the LCD screen beside "MIDI FILTER."

Page5: CTRL CHANGE

A: Ctrl Change

Here you can assign a MIDI control change number (CC#) to each front panel knob.
When you operate a knob or key in Program Play mode or LCD Edit mode, the assigned control change will be transmitted or received.



Knob .....[Portamento...Mod Depth]

Select the knob or key.

Ctrl# .....[OFF, CC#00...CC#95]

Select the MIDI control change number (CC#).

note If the specified number has been specified for another key or knob, an "*" will be displayed in the LCD screen beside "CTRL CHANGE."

Page6: PEDAL&SW

A: A.Pedal .....[Volume...FootPdl]

Select the function of the pedal that is connected to the ASSIGNABLE PEDAL jack. (With the factory settings, this is **Exp Pdl**.)

Volume
MIDI control change MIDI Volume (CC#07) will be assigned.
You can use a pedal to control the volume level of the program. This is used mainly as a fader-style level control. Pedal operations will also transmit [Bn, 07, vv] (CC#07) messages from the MIDI OUT connector.

note For a vocoder program, this controls the volume level of the internal tone generator of the carrier.

If the control change map (Page 5: CTRL CHANGE) Amp Level has been set to **CC#07**, this will control the volume level.

Exp Pdl
MIDI control change MIDI Expression (CC#11) will be assigned.
You can use a pedal to control the volume level. This is used mainly to add dynamic performance expression to the level. Pedal operations will also transmit [Bn, 0B, vv] (CC#11) messages from the MIDI IN connector.

Panpot
MIDI control change MIDI Panpot (CC#10) will be assigned.
You can use a pedal to control the panpot of the program. Pedal operations will also transmit [Bn, 0A, vv] (CC#10) messages from the MIDI IN connector.

note For a vocoder program, this controls the volume level of the audio that is output directly from the AUDIO IN 2 jack (Direct Level).

If the control change map (Page 5: CTRL CHANGE) Panpot has been set to **CC#10**, this will control panpot (or Direct Level).

A.Touch
After Touch will be assigned. Operating the pedal will transmit Channel Pressure [Dn, vv] messages from the MIDI OUT connector. If the Global mode parameters Page 3D: MIDI "MIDI 1" or Page 3E: MIDI "MIDI 2" are set to **A.Touch**, this can be used as a modulation source.

BreathC
MIDI control change MIDI Breath Control (CC#02) will be assigned.
Operating the pedal will transmit [Bn, 02, vv] messages from the MIDI OUT connector.
If the Global mode parameters Page 3D: MIDI "MIDI 1" or Page 3E: MIDI "MIDI 2" are set to **CC#02**, this can be used as a modulation source.

FootPdl
MIDI control change Foot Pedal (CC#04) will be assigned.
Operating the pedal will transmit [Bn, 04, vv] messages from the MIDI OUT connector.
If the Global mode parameters Page 3D: MIDI "MIDI 1" or Page 3E: MIDI "MIDI 2" are set to **CC#04**, this can be used as a modulation source.

B: A.SwFunc ..... [Damper...Arpegio]

Select the function of the pedal switch connected to the ASSIGNABLE SWITCH jack. (With the factory settings, this is **Damper**.)

Damper
The pedal switch will function as a damper pedal.

Prog +/–
The pedal switch will select programs consecutively.

Oct +/–
The pedal switch will switch octaves.
This lets you use the pedal to perform the functions of the front panel OCTAVE (or BANK/OCTAVE) [UP], [DOWN] keys.

On the **MS2000R**, this is effective only for a performance using the SELECT [1]–[16] keys.

Portmnt
The pedal switch will function as a portamento on/off switch.

Arpegio
The pedal switch will function as an arpeggiator on/off switch.

C: A.Switch.....[–, +]
Select the polarity of the pedal switch that is connected.
Set this to "–" if you are using a Korg PS-1 pedal switch or if you are not using a pedal switch.

D: A.SwMode ..... [UnLatch, Latch]
Specify how a connected pedal switch will turn on/off.
(With the factory settings, this is **Unlatch**.)

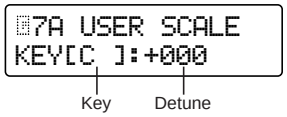
UnLatch
The switch will be on only while it is being pressed.

Latch
The switch will alternate between on and off each time it is pressed.

Page7: USER SCALE

A: User Scale

Specify the user scale.
For each pitch in the octave (C–B), you can adjust the pitch in a range of –100 — +100 cents.
The entire keyboard will use this scale if you set LCD Edit mode Page 01: COMMON "Scale" to **User Scale**.



Key .....[C...B]
Select the note whose pitch you wish to adjust.

Detune .....[–100...+100]
Adjust the pitch in one-cent units, relative to the equal temperament as 0.
A setting of **+100** raises the pitch a semitone (+100 cents) above standard pitch.
A setting of **–100** lowers the pitch a semitone (–100 cents) below standard pitch.

Page8: CALIB

Here you can set the active range of the **MS2000/MS2000R**'s controllers or a connected pedal switch or pedal. Make these settings if operating a controller or pedal does not produce the desired result.

A: AS

Make settings for a switch connected to the **MS2000/MS2000R**.
Turn the connected switch on/off, and then press the [+/YES] key.

B: AP

Set the active range of a pedal connected to the **MS2000/MS2000R**.
Move the connected pedal through its maximum range of movement, and then press the [+/YES] key.

C: BW (MS2000 only)

Set the active range of the **MS2000**'s pitch bender.
Move the pitch bender through its maximum range of movement, return it to the center, and then press the [+/YES] key.

D: MW (MS2000 only)

Set the active range of the **MS2000**'s modulation wheel.
Move the modulation wheel through its maximum range of movement, and then press the [+/YES] key.

If you do not perform these settings correctly, the display will indicate "Invalid Data" when you press the [+/YES] key. If this occurs, make the setting once again.

You must perform the Write operation for CALIB settings just as for other Global parameters. If you fail to perform the Write operation, the settings will revert to their previous values (☞p.30).

Appendices

About MIDI

By using a MIDI cable to connect MIDI devices, midi data can be exchanged between devices even if they are different models or were made by different manufacturers. For example you can use the **MS2000/MS2000R** to control an external MIDI device, or conversely use an external MIDI device to control the **MS2000/MS2000R** to make it produce sound.

MIDI messages transmitted and received by the MS2000/MS2000R

MIDI channels

MIDI uses sixteen channels (1–16). MIDI messages can be transmitted and received when the channel of the receiving device matches the channel of the transmitting device. The **MS2000/MS2000R** normally transmits and receives MIDI messages on its Global MIDI channel.
The global MIDI channel is set in Global mode Page 3: MIDI "MIDI Ch."
Performance data such as note-on/off and pitch bend from the **MS2000/MS2000R** is transmitted on the global MIDI channel.

Timbre channel

The number of timbres used will depend on the voice mode of the program: a **Single** program uses one, a **Split/Dual** program uses two, and a **Vocoder** program uses one. A separate MIDI channel can be assigned to each timbre.
The MIDI channel for each timbre is set in LCD Edit mode Page 03B: VOICE "MIDI ch."
If you are playing the **MS2000/MS2000R** by itself, or using an external MIDI keyboard to play it, set the MIDI channel of each timbre to be the global MIDI channel (**GLB**).
If you are connecting an external MIDI sequencer to the **MS2000/MS2000R** to play each timbre independently, set the channel of each timbre to the same channel as the corresponding track on your MIDI sequencer.

note Even if the timbre channel is not set to **GLB**, control changes assigned to effect parameters, Sync Control, and Timbre Select will be transmitted and received on the global MIDI channel.

Note-on/off

Note-on [9n, kk, vv], Note-off [8n, kk, vv]

(n: channel, kk: note number, vv: velocity)

When you play the keyboard of the **MS2000**, note-on/off messages are transmitted. (On the **MS2000R**, note-on/off messages are transmitted when you turn the [KEYBOARD] key on and press the SELECT [1]–[16] keys.) The note-off velocity is transmitted at a fixed 64, but is not received.
If the Global mode Page 1C: GLOBAL "Position" is **Post-KBD**, note-on/off messages will be transmitted by the arpeggiator if it is running.

Program change

Program change [Cn, pp]

(n: channel, pp: program number)

When you select a program in Program Play mode, a program change message is transmitted with the number corresponding to the 128 programs (A01–H16) stored in the MS2000's eight banks (A–H).
When the **MS2000/MS2000R** receives a program change message, it will select a program according to the settings of Global mode Page 4F: MIDI FILTER "P.Chg" (program change map).
If you wish to receive program changes, set Global mode Page 4A: MIDI FILTER "ProgChg" to **ENA**. If this is set to **DIS**, program changes will not be received.

The **MS2000/MS2000R** does not transmit or receive bank select messages ([Bn, 00, mm], [Bn, 20, bb]).

Aftertouch

Channel aftertouch [Dn, vv]

(n: channel, vv: value)

If Global mode Page 3D, E: MIDI "MIDI 1" or "MIDI 2" are set to **A.Touch**, aftertouch can be used as a modulation source for a virtual patch of a synth program or for the FC MOD of a vocoder program. (These messages will be received on the timbre channel.)
If Global mode Page 6A: PEDAL & SW "A.Pedal" is set to **A.Touch**, pedal movements will transmit channel after messages on the global MIDI channel.
If you wish to transmit and receive channel aftertouch, set Global mode Page 4B: MIDI FILTER "CtrlChg" to **ENA**. If this is set to **DIS**, channel aftertouch messages will not be transmitted or received.

Pitch bend

Pitch bend change [En, bb, mm]

(n: channel, bb: lower digits of value, mm: upper digits of value)

When pitch bend change messages are received, a pitch bend effect will be applied according to the value set for LCD Edit mode Page 4D: PITCH "Bend Range." If Global mode Page 2D or E: MIDI "MIDI1" or "MIDI 2" are set to **P.Bend**, pitch bend can be used as an FC MOD modulation source for the virtual patch of a synth program or vocoder program. In this case, the message will act as a modulation source where mm=64, bb=00 will be 0 (center value) for the range of –127 – +127. (This message is received on the timbre channel.)
When you move the PITCH BEND wheel on the **MS2000**, pitch bend change messages are transmitted on the global MIDI channel.
If you want pitch bend change messages to be received and transmitted, set Global mode Page 4C: MIDI FILTER "P.Bend" to **ENA**. If this is set to **DIS**, pitch bend change messages will not be received or transmitted.

Control changes

Control changes [Bn, cc, vv]

(n: channel, cc: control change no., vv: value)

Movements of the MODULATION wheel or a modulation source (MIDI 1, MIDI 2) can be transmitted and received as various controllers according to their control change number.
If you wish to transmit and receive control change messages, set Global mode Page 4B: MIDI FILTER "CtrlChg" to **ENA**. If this is set to **DIS**, control change messages will not be transmitted or received.

• Modulation depth (CC#01) [Bn, 01, vv]

When modulation depth is received, it will adjust the depth of the vibrato produced by LFO2 according to the setting of LCD Edit mode Page 4C: PITCH "Vibrato Int." If the maximum value (127) is received, vibrato will be applied over the full pitch range specified by "Vibrato Int." If a value of 0 is received, no vibrato will be applied.
When you move the MODULATION wheel of the **MS2000**, modulation depth messages will be transmitted on the global MIDI channel.

• Volume (CC#07) [Bn, 07, vv]

If you set Global mode Page 6A: PEDAL & SW "A.Pedal" to **Volume**, pedal movements will transmit volume messages on the global MIDI channel. By setting the AMP "Level" control change assignment to volume (CC#07), you can receive volume messages to control the volume.

• Panpot (CC#10) [Bn, 0A, vv]

If you set Global mode Page 6A: PEDAL & SW "A.Pedal" to **Panpot**, pedal movements will transmit panpot messages on the global MIDI channel. By setting the AMP "Panpot" control change assignment to panpot (CC#10), you can receive panpot messages to move the stereo location of the sound.

• Expression (CC#11) [Bn, 0B, vv]

When expression messages are received, the timbre volume will be controlled. If the maximum value (127) is received the volume will be maximum, and if a value of 0 is received the volume will be 0.
If you set Global mode Page 6A: PEDAL & SW "A.Pedal" to **Exp Pdl**, pedal movements will transmit expression messages on the global MIDI channel.

• Damper pedal (CC#64) [Bn, 40, vv]

Damper pedal messages can be received to turn the damper (hold) effect on/off for a timbre.
If you set Global mode Page 6B: PEDAL & SW "A.SwFunc" to **Damper**, movements of the assignable switch will transmit damper pedal messages on the global MIDI channel (0: OFF, 7F: ON).

• Portamento (CC#65) [Bn, 41, vv]

When portamento messages are received, the portamento effect of the timbre will be turned on/off. (If portamento time is 0, there will be no portamento effect.)
If you set Global mode Page 6B: PEDAL & SW "A.SwFunc" to **Portmnt**, movements of the assignable switch will transmit portamento messages on the global MIDI channel (0: OFF, 7F: ON).

Using control changes as a modulation source for a virtual patch

By setting Global mode Page 3D, 3: MIDI "MIDI 1" or "MIDI 2" to **CC#cc** (cc=00–95), you can use control changes as the modulation source of the virtual patch of a synth program or the FC MOD modulation source of a vocoder program. The value 0–127 of the modulation source will be used without change, and no distinction will be made between upper byte (MSB)/lower byte (LSB) or between continuous type/switch type.

Assigning control changes to a parameter controller (knob, key)

You can make settings in Global mode Page 5A: CTRL CHANGE to assign principal parameter controllers of the front panel (knobs, keys) to control changes CC#00–CC#95. By doing so, you can use these controllers to transmit the corresponding control change message, and when the control change messages are received the result will be the same as if the controller were operated. (☞p.65 "Front panel knob/key control change assignments")

Sound parameter controllers will transmit and receive on the timbre channel, and effect parameter controllers will transmit and receive on the global MIDI channel.

If the voice mode of the program is **Split** or **Dual** and if both timbre channels are set to the global MIDI channel (**GLB**), control change messages will be transmitted only for the timbre chosen by the front panel TIMBRE SELECT [SELECT] key.
By using the front panel TIMBRE SELECT [SELECT] key to switch timbres, you can transmit a message (Timbre Select) that specifies the timbre to which the messages will apply. When the **MS2000/MS2000R** receives a Timbre Select message, the timbre will switch according to the received value. A control change message is used for this Timbre Select message as specified by Global mode Page 4H: MIDI FILTER "TimbSelect" (0: Timbre 1, 1–127: Timbre 2).

Parameters transmitted and received via NRPN

Front panel knobs and keys other than the controls listed above are assigned NRPN (Non Registered Parameter No.). NRPN messages can be used freely by any musical instrument manufacturer or model.

NRPN editing is performed using the following procedure.

① **Use NRPN MSB (CC#99) [Bn, 63, mm] and NRPN LSB (CC#98) [Bn, 62, rr] (n: channel, mm, rr: parameter no. upper and lower bytes) to select the parameter.**

② **Use data entry MSB (CC#6) [Bn, 06, mm] (n: channel, mm: parameter value) to specify the value.**

note On the **MS2000/MS2000R**, only data entry MSB is used.

Controlling the arpeggiator

When arpeggiator settings are modified by the front panel keys or knobs, the following NRPN messages are transmitted. When these NRPN messages are received, the corresponding arpeggiator settings will change accordingly. These messages are transmitted and received on the global MIDI channel. For the correspondence between the values of the message and the values of the **MS2000/MS2000R** parameter, refer to the table.

- **ON/OFF: [Bn, 63, 00, Bn, 62, 02, Bn, 06, mm] (n: channel, mm: parameter value)**
- **RANGE: [Bn, 63, 00, Bn, 62, 03, Bn, 06, mm] (n: channel, mm: parameter value)**
- **LATCH: [Bn, 63, 00, Bn, 62, 04, Bn, 06, mm] (n: channel, mm: parameter value)**
- **TYPE: [Bn, 63, 00, Bn, 62, 07, Bn, 06, mm] (n: channel, mm: parameter value)**
- **GATE: [Bn, 63, 00, Bn, 62, 0A, Bn, 06, mm] (n: channel, mm: parameter value)**

	MSB (Hex)	LSB (Hex)	**Value** (transmitted)	**Value** (received)
ON/OFF	00	02	**0:** OFF, **127:** ON	**0...63:** OFF, **64...127:** ON
RANGE	00	03	**0:** 1 Octave, **1:** 2 Octave, **2:** 3 Octave, **3:** 4 Octave	**0:** 1 Octave, **1:** 2 Octave, **2:** 3 Octave, **3...127:** 4 Octave
LATCH	00	04	**0:** OFF, **127:** ON	**0...63:** OFF, **64...127:** ON
TYPE	00	07	**0:** Up, **26:** Down, **51:** Alt1, **71:** Alt2, **102:** Random, **127:** Trigger	**0...21:** Up, **22...42:** Down, **43...63:** Alt1, **64...85:** Alt2, **86...106:** Random, **107...127:** Trigger
GATE	00	0A	Refer to separate table (GATE values)	Refer to separate table (GATE values)

GATE values

Value (transmitted, received)	Gate Time [%]	Value (transmitted, received)	Gate Time [%]	Value (transmitted, received)	Gate Time [%]	Value (transmitted, received)	Gate Time [%]	Value (transmitted, received)	Gate Time [%]
0, 1	000	**27**	021	**54**	042	**80, 81**	063	**107**	084
2	001	**28, 29**	022	**55**	043	**82**	064	**108**	085
3	002	**30**	023	**56, 57**	044	**83**	065	**109, 110**	086
4, 5	003	**31**	024	**58**	045	**84**	066	**111**	087
6	004	**32**	025	**59**	046	**85, 86**	067	**112**	088
7	005	**33, 34**	026	**60**	047	**87**	068	**113, 114**	089
8	006	**35**	027	**61, 62**	048	**88**	069	**115**	090
9, 10	007	**36**	028	**63**	049	**89**	070	**116**	091
11	008	**37, 38**	029	**64**	050	**90, 91**	071	**117**	092
12	009	**39**	030	**65**	051	**92**	072	**118, 119**	093
13	010	**40**	031	**66, 67**	052	**93**	073	**120**	094
14, 15	011	**41**	032	**68**	053	**94, 95**	074	**121**	095
16	012	**42, 43**	033	**69**	054	**96**	075	**122**	096
17	013	**44**	034	**70**	055	**97**	076	**123, 124**	097
18, 19	014	**45**	035	**71, 72**	056	**98**	077	**125**	098
20	015	**46**	036	**73**	057	**99, 100**	078	**126**	099
21	016	**47, 48**	037	**74**	058	**101**	079	**127**	100
22	017	**49**	038	**75, 76**	059	**102**	080		
23, 24	018	**50**	039	**77**	060	**103**	081		
25	019	**51**	040	**78**	061	**104, 105**	082		
26	020	**52, 53**	041	**79**	062	**106**	083		

Other controls

Panel knobs and keys other than the arpeggiator transmit and receive the following NRPN messages. These are transmitted and received on the MIDI channel of the timbre. If the voice mode is **Split** or **Dual** and the timbre channel (LCD Edit mode Page 03B: VOICE "MIDI ch") of both timbres is set to the global MIDI channel (**GLB**), NRPN messages will be transmitted/received only for the timbre that is selected by the front panel TIMBRE SELECT [SELECT] key. For the correspondence between the values of the message and the values of the **MS2000/MS2000R** parameter, refer to the table.

Controlling the VIRTUAL PATCH 1–4 SOURCE

- **PATCH 1•SOURCE: [Bn, 63, 04, Bn, 62, 00, Bn, 06, mm] (n: channel, mm: parameter value)**
- **PATCH 2•SOURCE: [Bn, 63, 04, Bn, 62, 01, Bn, 06, mm] (n: channel, mm: parameter value)**
- **PATCH 3•SOURCE: [Bn, 63, 04, Bn, 62, 02, Bn, 06, mm] (n: channel, mm: parameter value)**
- **PATCH 4•SOURCE: [Bn, 63, 04, Bn, 62, 03, Bn, 06, mm] (n: channel, mm: parameter value)**

Controlling the VIRTUAL PATCH 1–4 DESTINATION

- **PATCH1•DESTINATION: [Bn, 63, 04, Bn, 62, 08, Bn, 06, mm] (n: channel, mm: parameter value)**
- **PATCH2•DESTINATION: [Bn, 63, 04, Bn, 62, 09, Bn, 06, mm] (n: channel, mm: parameter value)**
- **PATCH 3•DESTINATION: [Bn, 63, 04, Bn, 62, 0A, Bn, 06, mm] (n: channel, mm: parameter value)**
- **PATCH4•DESTINATION: [Bn, 63, 04, Bn, 62, 0B, Bn, 06, mm] (n: channel, mm: parameter value)**

Controlling the FC MOD source of a vocoder program FILTER

- **FC MOD SOURCE: [Bn, 63, 04, Bn, 62, 00, Bn, 06, mm] (n: channel, mm: parameter value)**

	Synth Parameter	Vocoder Parameter	MSB (Hex)	LSB (Hex)	**Value** (transmitted)	**Value** (received)
PATCH 1	SOURCE	FC MOD SOURCE	04	00	**0**: EG1, **18**: EG2, **36**: LFO1, **54**: LFO2 **72**: VELOCITY, **90**: KBD TRACK **108**: MIDI 1, **126**: MIDI 2	**0...15**: EG1, **16...31**: EG2, **32...47**: LFO1 **48...63**: LFO2, **64...79**: VELOCITY **80...95**: KBD TRACK, **96...111**: MIDI 1 **112...127**: MIDI 2
PATCH 2	SOURCE	———	04	01		
PATCH 3	SOURCE	———	04	02		
PATCH 4	SOURCE	———	04	03		
PATCH 1	DESTINATION	———	04	08	**0**: PITCH, **18**: OSC2 PITCH **36**: OSC1 CTRL1, **54**: NOISE LEVEL **72**: CUTOFF, **90**: AMP, **108**: PAN **126**: LFO2 FREQ	**0...15**: PITCH, **16...31**: OSC2 PITCH **32...47**: OSC1 CTRL1 **48...63**: NOISE LEVEL, **64...79**: CUTOFF **80...95**:AMP, **96...111**: PAN **112...127**: LFO2 FREQ
PATCH 2	DESTINATION	———	04	09		
PATCH 3	DESTINATION	———	04	0A		
PATCH 4	DESTINATION	———	04	0B		

Controlling SEQ EDIT/CH PARAM

If the program is a synth program, the SEQ Step Value can be controlled. If the program is a vocoder program, the CH PARAM (CH LEVEL and CH PAN) of the synthesis filter can be controlled.

- **SEQ1 Step Value 1...16/Channel Level 1...16ch: [Bn, 63, 04, Bn, 62, 10...1F, Bn, 06, mm] (n: channel, mm: parameter value)**

	Synth Parameter	Vocoder Parameter	MSB (Hex)	LSB (Hex)	**Value** (transmitted)	**Value** (received)
SEQ1/CH LEVEL	STEP [01]	CH [01]	04	10	SEQ1: *1 CH LEVEL: **0...127**	SEQ1: *1 CH LEVEL: **0...127**
SEQ1/CH LEVEL	STEP [02]	CH [02]	04	11		
SEQ1/CH LEVEL	STEP [03]	CH [03]	04	12		
SEQ1/CH LEVEL	STEP [04]	CH [04]	04	13		
SEQ1/CH LEVEL	STEP [05]	CH [05]	04	14		
SEQ1/CH LEVEL	STEP [06]	CH [06]	04	15		
SEQ1/CH LEVEL	STEP [07]	CH [07]	04	16		
SEQ1/CH LEVEL	STEP [08]	CH [08]	04	17		
SEQ1/CH LEVEL	STEP [09]	CH [09]	04	18		
SEQ1/CH LEVEL	STEP [10]	CH [10]	04	19		
SEQ1/CH LEVEL	STEP [11]	CH [11]	04	1A		
SEQ1/CH LEVEL	STEP [12]	CH [12]	04	1B		
SEQ1/CH LEVEL	STEP [13]	CH [13]	04	1C		
SEQ1/CH LEVEL	STEP [14]	CH [14]	04	1D		
SEQ1/CH LEVEL	STEP [15]	CH [15]	04	1E		
SEQ1/CH LEVEL	STEP [16]	CH [16]	04	1F		

*1:

- When “Knob” = Step Length, data correspondences for both transmission and reception will be:
  0...9: –6, **10...19:** –5, **20..29:** –4, **30...39:** –3, **40...49:** –2, **50...59:** –1, **60...68:** 0, **69...78:** +1, **79...88:** +2, **89...98:** +3, **99...108:** +4, **109...118:** +5, **119...127:** +6
- When “Knob” = Pitch or OSC2 Semi, refer to p.66 “OSC 2 Semitone values.”
- When “Knob=” other values, both transmission and reception will be:
  0/1: –63, **2:** –62...**64:** 0...**127**: +63

- **SEQ2 Step Value 1...16/Channel Pan 1...16ch: [Bn, 63, 04, Bn, 62, 20...2F, Bn, 06, mm] (n: channel, mm: parameter value)**

	Synth Parameter	Vocoder Parameter	MSB (Hex)	LSB (Hex)	**Value** (transmitted)	**Value** (received)
SEQ2/CH PAN	STEP [01]	CH [01]	04	20		
SEQ2/CH PAN	STEP [02]	CH [02]	04	21		
SEQ2/CH PAN	STEP [03]	CH [03]	04	22		
SEQ2/CH PAN	STEP [04]	CH [04]	04	23		
SEQ2/CH PAN	STEP [05]	CH [05]	04	24		
SEQ2/CH PAN	STEP [06]	CH [06]	04	25		
SEQ2/CH PAN	STEP [07]	CH [07]	04	26	SEQ2: *1	SEQ2: *1
SEQ2/CH PAN	STEP [08]	CH [08]	04	27	CH PAN:	CH PAN:
SEQ2/CH PAN	STEP [09]	CH [09]	04	28	**0/1:** L63, **2:** L62...**63:** L01	**0/1:** L63, **2:** L62...**63:** L01
SEQ2/CH PAN	STEP [10]	CH [10]	04	29	**64:** CNT, **65:** R01...**127:** R63	**64:** CNT, **65:** R01...**127:** R63
SEQ2/CH PAN	STEP [11]	CH [11]	04	2A		
SEQ2/CH PAN	STEP [12]	CH [12]	04	2B		
SEQ2/CH PAN	STEP [13]	CH [13]	04	2C		
SEQ2/CH PAN	STEP [14]	CH [14]	04	2D		
SEQ2/CH PAN	STEP [15]	CH [15]	04	2E		
SEQ2/CH PAN	STEP [16]	CH [16]	04	2F		

*1:

- When “Knob” = Step Length, data correspondences for both transmission and reception will be:
  0...9: –6, **10...19:** –5, **20..29:** –4, **30...39:** –3, **40...49:** –2, **50...59:** –1, **60...68:** 0, **69...78:** +1, **79...88:** +2, **89...98:** +3, **99...108:** +4, **109...118:** +5, **119...127:** +6
- When “Knob” = Pitch or OSC2 Semi, refer to p.66 “OSC 2 Semitone values.”
- When “Knob=” other values, both transmission and reception will be:
  0/1: –63, **2:** –62...**64:** 0...**127:** +63

- **SEQ3 Step Value 1...16: [Bn, 63, 04, Bn, 62, 30...3F, Bn, 06, mm] (n: channel, mm: parameter value)**

	Synth Parameter	Vocoder Parameter	MSB (Hex)	LSB (Hex)	**Value** (transmitted)	**Value** (received)
SEQ3	STEP [01]	————	04	30		
SEQ3	STEP [02]	————	04	31		
SEQ3	STEP [03]	————	04	32		
SEQ3	STEP [04]	————	04	33		
SEQ3	STEP [05]	————	04	34		
SEQ3	STEP [06]	————	04	35		
SEQ3	STEP [07]	————	04	36		
SEQ3	STEP [08]	————	04	37	*1	*1
SEQ3	STEP [09]	————	04	38		
SEQ3	STEP [10]	————	04	39		
SEQ3	STEP [11]	————	04	3A		
SEQ3	STEP [12]	————	04	3B		
SEQ3	STEP [13]	————	04	3C		
SEQ3	STEP [14]	————	04	3D		
SEQ3	STEP [15]	————	04	3E		
SEQ3	STEP [16]	————	04	3F		

*1:

- When "Knob" = Step Length, data correspondences for both transmission and reception will be:
  0...9: –6, **10...19:** –5, **20..29:** –4, **30...39:** –3, **40...49:** –2, **50...59:** –1, **60...68:** 0, **69...78:** +1, **79...88:** +2, **89...98:** +3, **99...108:** +4, **109...118:** +5, **119...127:** +6
- When "Knob" = Pitch or OSC2 Semi, refer to p.66 "OSC 2 Semitone values."
- When "Knob=" other values, both transmission and reception will be:
  0/1: –63, **2:** –62...**64:** 0...**127:** +63

If you are using two **MS2000/MS2000R** units to transmit and receive these parameters, you must set the transmitting and receiving programs to the same settings.

Sync control

The first-played note-on will sync a Mod Sequence or LFO whose "KeySync" = **Timbre**. However in order to distinguish manually played note-on/off's from those that are repeated automatically by the arpeggiator, the **MS2000/MS2000R**'s arpeggiator will transmit a Sync Control message at the time of note-on (when Global mode Page 1C: GLOBAL "Position" is **PostKBD**).
A control change message is used for this Sync Control message as specified by Global mode Page 4G: MIDI FILTER "SyncCtrl."
By using Sync Control to apply sync to a Mod Sequence or LFO, you can cause each arpeggiated note to advance the Mod Sequence or random LFO by one step.

Silencing all notes of a given channel

• All note off (CC#123) [Bn, 7B, 00]

(value is 00)

When an All Note Off message is received, all currently-sounding notes of that channel will be turned off. Some sound may linger due to the envelope settings.

• All sound off (CC#120) [Bn, 78, 00]

(value is 00)

When an All Sound Off message is received, all notes currently sounding on that channel will be silenced. While All Note Off allows the decay of a note to continue, the All Sound Off will silence the sound immediately.
However, this message is intended for use in emergencies, and is not for use during a performance.

Resetting all controllers of a given channel

• Reset all controllers (CC#121) [Bn, 79, 00]

(value is 00)

When a Reset All Controllers message is received, all controller values currently operating on that channel will be reset.

Arpeggiator

When the **MS2000/MS2000R**'s arpeggiator is synchronized to a connected external MIDI device, system realtime messages Start and Stop will control the arpeggiator.

Start [FA]

When a Start [FA] message is received, the arpeggiator will start from the pitch of the first played note.

Stop [FC]

When a Stop [FC] message is received, the arpeggiator will stop. (It will not be turned off; the arpeggiator will start again when additional notes are played.)

System exclusive messages

MS2000/MS2000R format

F0: exclusive status
42: Korg ID
3n: [n=0–F] global MIDI channel
58: MS2000/MS2000R model ID
ff: function ID (type of message)
–
F7: end of exclusive

Universal system exclusive

System exclusive messages include a special category of messages whose purpose is officially defined. These are called universal system exclusive messages.
Of these universal system exclusive messages, the **MS2000/MS2000R** supports Master Volume and Master Fine Tuning.

Master volume [F0, 7F, nn, 04, 01, vv, mm, F7]

(vv: lower byte of value, mm: upper byte of value, [mm, vv=7F, 7F] is Max, [mm, vv=00, 00] is 0)

When a Master Volume message is received, the **MS2000/MS2000R** will adjust its overall volume.

If Global mode Page 1E: GLOBAL "AudioInThru" is **ON**, the input signal of AUDIO IN 1/2 will not be affected by Master Volume.

Master fine tuning [F0, 7F, nn, 04, 03, vv, mm, F7]

(A value of 8192 [mm, vv=40, 00] is center (0 cent, A4=440.0Hz), 4096 [mm, vv=20, 00] is –50 cents, and 12288 [mm, vv=60, 00] is +50 cents.)

When master fine tuning is received, the value specified for the **MS2000/MS2000R**'s Global mode Page 1A: GLOBAL "Mst.Tune" will be ignored, and the overall pitch will be specified by the data that was received.

Transmitting sound settings etc. (Data Dump)

Program data and global data can be transmitted as a MIDI exclusive data. The action of transmitting MIDI exclusive data to an external MIDI device is called a data dump.
By performing a data dump, you can store various types of data on an external MIDI device, or rewrite the sounds or settings of a second **MS2000/MS2000R**.
Data dumps can be performed on the **MS2000/MS2000R** as follows.

- In Global mode Page 3F: MIDI Dump, select the type of data to be transmitted (1PROG, PROG, GLOBAL, ALL), and transmit the data dump.

  1PROG will dump only the data for the program selecting in Program Play mode. When the **MS2000/MS2000R** receives such a data dump, the settings of the currently selected program will be rewritten by the data that was received.
  In this case, the data will not be saved unless you perform the Write operation.
  PROG will dump the data for all programs saved in memory.
  GLOBAL will dump global data (Global mode settings).
  ALL will dump all programs as well as global data.
  If **PROG**, **GLOBAL**, or **ALL** dumps are received by the **MS2000/MS2000R**, the data will be written directly into internal memory; you do not need to perform the Write operation.

- When a dump request is received from an external device, the **MS2000/MS2000R** will transmit the data dump that was requested.

- When you switch to LCD Edit mode, the data of only the selected program will be dumped.

If you wish to receive a data dump, set Global mode Page 4D: MIDI FILTER "SystemEx" to **ENA**. If this is set to **DIS**, data dumps will not be received.

note If you wish to obtain the "MIDI Implementation" which includes details of the MIDI exclusive format, please contact a Korg dealer.

Front panel knob/key control change assignments

Control changes can be assigned to each front panel knob/key of the **MS2000/MS2000R** so that the changes in sound as controlled by knob/key operations can be transmitted as performance data.

	Synth Parameter	Vocoder Parameter	Initial	**Value** (transmitted)	**Value** (received)
PITCH	Portamento	Portamento	CC#05	**0...127**	**0...127**
OSC 1	Wave	Wave	CC#77	**0**: Saw, **18**: Pulse, **36**: Tri, **54**: Sin, **72**: Vox Wave **90**: DWGS, **108**: Noise, **126**: Audio In	**0...15**: Saw, **16...31**: Pulse, **32...47**: Tri, **48...63**: Sin, **64...79**: Vox Wave, **80...95**: DWGS, **96...111**: Noise, **112...127**: Audio In
	Control1	Control1	CC#14	**0...127**	**0...127**
	Control2	Control2	CC#15	**0...127** * OSC 1 Wave=DWGS; see p.66	**0...127** * OSC 1 Wave=DWGS; see p.66
OSC 2 Audio in 2	Wave	– – – – – – – – – – –	CC#78	**0:** Saw, **64:** Squ, **127:** Tri	**0...42:** Saw, **43...85:** Squ, **86...127:** Tri
	OSC Mod	– – – – – – – – – – –	CC#82	**0:** OFF, **43:** Ring, **85:** Sync, **127:** RingSync	**0...31:** OFF, **32...63:** Ring, **64...95:** Sync, **96...127:** RingSync
	Semitone	HPF Level	CC#18	Synth; see p.66 Vocoder; **0... 127**	Synth; see p.66 Vocoder; **0... 127**
	Tune	Threshold	CC#19	Synth; **0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63	Synth; **0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63
MIXER	OSC 1 Level	OSC 1 Level	CC#20	**0...127**	**0...127**
	OSC 2 Level	Inst Level	CC#21	**0...127**	**0...127**
	Noise Level	Noise Level	CC#22	**0...127**	**0...127**
FILTER	Type	Formant Shift	CC#83	Synth; **0:** 24LPF, **43:** 12LPF, **85:** 12BPF, **127:** 12HPF Vocoder; **0:** 0, **32:** +1, **63:** +2, **95:** –1, **127:** –2	Synth; **0...31:** 24LPF, **32...63:** 12LPF, **64...95:** 12BPF, **96...127:** 12HPF Vocoder; **0...25:** 0, **26...51:** +1, **52...76:** +2, **77..102:** –1, **103...127:** –2
	Cutoff	Cutoff	CC#74	Synth; **0...127** Vocoder; **0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63	Synth; **0...127** Vocoder; **0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63
	Resonance	Resonance	CC#71	**0...127**	**0...127**
	EG 1 Int	Mod Int	CC#79	**0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63	**0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63
	KBD Track	E.F.Sense	CC#85	Synth; **0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63	Synth; **0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63 Vocoder; **0...127**
AMP	Level	Level	CC#07	**0...127**	**0...127**
	Panpot	Direct Level	CC#10	Synth; **0 / 1:** L63, **2:** L62...63: L01, **64:** CNT, **65:** R01...**127:** R63 Vocoder; **0...127**	Synth; **0 / 1:** L63, **2:** L62...63: L01, **64:** CNT, **65:** R01...**127:** R63 Vocoder; **0...127**
	EG2/GATE	– – – – – – – – – – –	CC#86	**0:** EG2, **127:** GATE	**0...63:** EG2, **64...127:** GATE
	Distortion	Distortion	CC#92	**0:** OFF, **127:** ON	**0...63:** OFF, **64...127:** ON
EG 1	Attack	Attack	CC#23	**0...127**	**0...127**
	Decay	Decay	CC#24	**0...127**	**0...127**
	Sustain	Sustain	CC#25	**0...127**	**0...127**
	Release	Release	CC#26	**0...127**	**0...127**
EG 2	Attack	Attack	CC#73	**0...127**	**0...127**
	Decay	Decay	CC#75	**0...127**	**0...127**
	Sustain	Sustain	CC#70	**0...127**	**0...127**
	Release	Release	CC#72	**0...127**	**0...127**
LFO 1	Wave	Wave	CC#87	**0:** Saw, **43:** Squ, **85:** Tri, **127:** S/H	**0...31:** Saw, **32...63:** Squ, **64...95:** Tri, **96...127:** S/H
	Frequency	Frequency	CC#27	**0...127**, Tempo Sync=ON; see p.66	**0...127**, Tempo Sync=ON; see p.66
LFO 2	Wave	Wave	CC#88	**0:** Saw, **43:** Squ(+), **85:** Sin, **127:** S/H	**0...31:** Saw, **32...63:** Squ(+), **64...95:** Sin, **96...127:** S/H
	Frequency	Frequency	CC#76	**0...127**	**0...127**
PATCH 1	Intensity	– – – – – – – – – – –	CC#28	**0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63	**0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63
PATCH 2	Intensity	– – – – – – – – – – –	CC#29	**0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63	**0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63
PATCH 3	Intensity	– – – – – – – – – – –	CC#30	**0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63	**0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63
PATCH 4	Intensity	– – – – – – – – – – –	CC#31	**0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63	**0 / 1:** –63, **2:** –62...**63:** –1, **64:** 0, **65:** +1...**127:** +63
SEQ	ON/OFF	– – – – – – – – – – –	CC#89	**0:** OFF, **127:** ON	**0...63:** OFF, **64...127:** ON
MOD FX	LFO Speed	LFO Speed	CC#12	**0...127**	**0...127**
	Depth	Depth	CC#93	**0...127**	**0...127**
DELAY FX	Delay Time	Delay Time	CC#13	**0...127**, Tempo Sync=ON; see p.66	**0...127**, Tempo Sync=ON; see p.66
	Depth	Depth	CC#94	**0...127**	**0...127**

note Different parameters are assigned to synth parameters and vocoder parameters.

note For programs whose voice mode is **Split/Dual**, this will apply only to the timbre selected by the TIMBRE SELECT [SELECT] key if the timbre MIDI channel (LCD Edit mode Page 03B: VOICE "MIDI ch") is **GLB**.

note Effect parameters are transmitted and received on the global MIDI channel, regardless of the timbre MIDI channel.

If you are using two **MS2000/MS2000R** units to transmit and receive these parameters, you must set the transmitting and receiving programs to the same settings.

Control 2 values when OSC 1 Wave = DWGS

When the synth parameter OSC 1 "Wave" is set to **DWGS**, the [CONTROL 2] knob will select the DWGS waveform. The value of the control change transmitted/received by operating the [CONTROL 2] knob corresponds to the parameter value as follows.

Value (transmitted, received)	DWGS Wave	Value (transmitted, received)	DWGS Wave
0, 1	1	**64, 65**	33
2, 3	2	**66, 67**	34
4, 5	3	**68, 69**	35
6, 7	4	**70, 71**	36
8, 9	5	**72, 73**	37
10, 11	6	**74, 75**	38
12, 13	7	**76, 77**	39
14, 15	8	**78, 79**	40
16, 17	9	**80, 81**	41
18, 19	10	**82, 83**	42
20, 21	11	**84, 85**	43
22, 23	12	**86, 87**	44
24, 25	13	**88, 89**	45
26, 27	14	**90, 91**	46
28, 29	15	**92, 93**	47
30, 31	16	**94, 95**	48
32, 33	17	**96, 97**	49
34, 35	18	**98, 99**	50
36, 37	19	**100, 101**	51
38, 39	20	**102, 103**	52
40, 41	21	**104, 105**	53
42, 43	22	**106, 107**	54
44, 45	23	**108, 109**	55
46, 47	24	**110, 111**	56
48, 49	25	**112, 113**	57
50, 51	26	**114, 115**	58
52, 53	27	**116, 117**	59
54, 55	28	**118, 119**	60
56, 57	29	**120, 121**	61
58, 59	30	**122, 123**	62
60, 61	31	**124, 125**	63
62, 63	32	**126, 127**	64

OSC 2 Semitone values

The value of the control change transmitted/received by operating the OSC 2 [SEMITONE] knob of a synth program corresponds to the parameter value as follows.

Value (transmitted, received)	OSC 2 Semitone	Value (transmitted, received)	OSC 2 Semitone
0...2	–24	**66, 67**	+1
3...5	–23	**68...70**	+2
6, 7	–22	**71...73**	+3
8...10	–21	**74, 75**	+4
11...13	–20	**76...78**	+5
14, 15	–19	**79, 80**	+6
16...18	–18	**81...83**	+7
19, 20	–17	**84...86**	+8
21...23	–16	**87, 88**	+9
24...26	–15	**89...91**	+10
27, 28	–14	**92...94**	+11
29...31	–13	**95, 96**	+12
32, 33	–12	**97...99**	+13
34...36	–11	**100, 101**	+14
37...39	–10	**102...104**	+15
40, 41	–9	**105...107**	+16
42...44	–8	**108, 109**	+17
45...47	–7	**110...112**	+18
48, 49	–6	**113, 114**	+19
50...52	–5	**115...117**	+20
53, 54	–4	**118...120**	+21
55...57	–3	**121, 122**	+22
58...60	–2	**123...125**	+23
61, 62	–1	**126, 127**	+24
63...65	0		

"Sync Note" values when LFO 1/2 "Tempo Sync" = ON or when DELAY FX "Tempo Sync" = ON

When "Tempo Sync" is **ON** for LFO 1/2 or DELAY FX, the parameter adjusted by the LFO [FREQUENCY] or EFFECTS [SPEED/TIME] knobs will change to "Sync Note." In conjunction with this, the control change values transmitted/received by operating the knob will correspond to the parameter values as follows.

Value (transmitted, received)	LFO Sync Note	DELAY Sync Note
0...8	1/1	1/32
9...17	3/4	1/24
18...25	2/3	1/16
26...34	1/2	1/12
35...42	3/8	3/32
43...51	1/3	1/8
52...59	1/4	1/6
60...68	3/16	3/16
69...76	1/6	1/4
77...85	1/8	1/3
86...93	3/32	3/8
94...102	1/12	1/2
103...110	1/16	2/3
111...119	1/24	3/4
120...127	1/32	1/1

How "Resolution" and "Sync Note" values correspond to note values

The values of SEQ COMMON or ARPEGGIO "Resolution" and LFO or DELAY "Sync Note" (when "Tempo Sync" = **ON**) correspond to the following note values.
Each parameter will function according to the tempo specified by the [TEMPO] knob and the note value corresponding to its parameter value.

Note Value	SEQ COMMON "Resolution"	LFO, Delay "Sync Note"	Arpeggio "Resolution"
𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯₃	1/48	————	————
𝅘𝅥𝅯𝅘𝅥𝅯	1/32	1/32	————
𝅘𝅥𝅯𝅘𝅥𝅯₃	1/24	1/24	1/24
𝅘𝅥𝅯𝅘𝅥	1/16	1/16	1/16
𝅘𝅥𝅯₃	1/12	1/12	1/12
𝅘𝅥𝅯.	3/32	3/32	————
𝅘𝅥𝅯	1/8	1/8	1/8
𝅗𝅥₃	1/6	1/6	1/6
𝅘𝅥.	3/16	3/16	————
𝅘𝅥	1/4	1/4	1/4
𝅗𝅥₃	1/3	1/3	————
𝅗𝅥.	3/8	3/8	————
𝅗𝅥	1/2	1/2	————
𝅝₃	2/3	2/3	————
𝅗𝅥.	3/4	3/4	————
𝅝	1/1	1/1	————

Voice Name List

No.	Name	Category	Mode	SEQ 1	SEQ 2	SEQ 3	ARPEGGIATOR
A01	Stab Saw	Synth Hard	Single				OFF
A02	Synth Lana	Arpeggio	Single	Panpot	Pitch	Step Length	Up
A03	Evolution	Synth Pad	Single	LFO1 Freq	Patch 4 Int	EG2 Release	OFF
A04	Boost Bass	Synth Bass	Single				OFF
A05	Dirty Sync	Synth Lead	Single				OFF
A06	Zoop Mania	Sequence	Dual	T1 Patch 4 Int	EG2 Decay	Pitch	Down
				T2 OSC2 Level	OSC1 Ctrl1	Amp Level	
A07	Ice Field	Bell	Single				OFF
A08	Lounge Organ	Keyboard	Single				OFF
A09	MG Bass	Synth Bass	Single				OFF
A10	GatesOfHell	Sequence	Single	Amp Level	None	None	OFF
A11	PWM Strings	Strings	Single				OFF
A12	Turn Wheel	Synth Lead	Single				OFF
A13	Synth Tp	Synth Brass	Single				OFF
A14	DWGS WaveSeq	Wave Seq	Single	OSC1 Ctrl2	Panpot	None	OFF
A15	Drive Bass	Synth Bass	Single				OFF
A16	Surrounded	S.E.	Single	LFO1 Freq	None	None	OFF
B01	Lazy Pitch	Synth Hard	Single				OFF
B02	Stairs Pad	Arpeggio	Dual	T1 Panpot	EG1 Int	Step Length	Alt1
				T2 None	None	None	
B03	Silk Pad	Synth Pad	Single				OFF
B04	Zap Bass	Synth Bass	Single				OFF
B05	Uni Synth	Synth Lead	Dual	T1			OFF
				T2			
B06	PsycheTrance	Sequence	Dual	T1 Amp Level	Pitch	OSC2 Semi	OFF
				T2 Amp Level	Noise Level	None	
B07	Deep Bell	Bell	Single	Patch1 Int	None	None	OFF
B08	Synth Clav	Keyboard	Single				OFF
B09	Line Bass	Synth Bass	Single				OFF
B10	SearchEngine	Sequence	Dual	T1 Step Length	None	None	Trigger
				T2 EG1 Decay	Noise Level	Cutoff	
B11	Voice /A/	Choir	Single				OFF
B12	Far Horizon	Synth Lead	Dual	T1			OFF
				T2			
B13	Glass	Synth Soft	Single				OFF
B14	Random	Sequence	Single	Pitch	OSC1 Ctrl1	Cutoff	OFF
B15	Jami Bass	Synth Bass	Single				OFF
B16	Loomy	S.E.	Single				OFF
C01	Poly Line	Synth Hard	Single				OFF
C02	Krazy Arpy 1	Arpeggio	Single				Random
C03	Mod3&4 Squad	Synth Pad	Single				OFF
C04	What D' Time	Synth Bass	Single				OFF
C05	Healing	Synth Lead	Single				OFF
C06	Auto Disco	Sequence	Dual	T1			Up
				T2			
C07	Candy Box	Bell	Single				OFF
C08	Vintage EP	Keyboard	Single				OFF
C09	Mini Bass	Synth Bass	Single				OFF
C10	Tap Lead	Sequence	Dual	T1 Cutoff	OSC2 Semi	None	Up
				T2 Pitch	Cutoff	None	
C11	Royal Pad	Synth Pad	Single				OFF
C12	Freq Lead	Synth Lead	Single				OFF
C13	Solemn Brass	Synth Brass	Dual	T1			OFF
				T2			
C14	IZDISA-WS	Wave Seq	Single	OSC1 Ctrl2	None	None	OFF
C15	House Bass	Synth Bass	Single				OFF
C16	Invaders	S.E.	Single	EG1 Attack	Resonance	None	Random

No.	Name	Category	Mode	SEQ 1	SEQ 2	SEQ 3	ARPEGGIATOR
D01	Ana Fuzz	Synth Hard	Single				OFF
D02	Water Edge	Arpeggio	Dual	T1 Noise Level	None	None	Alt2
				T2 Pitch	OSC2 Level	None	
D03	Reactor Pad	Synth Pad	Single	Step Length	Panpot	None	OFF
D04	MS-101 Sqr	Synth Bass	Single				OFF
D05	Edge Lead	Synth Lead	Single				OFF
D06	Goa Trax	Sequence	Dual	T1 Amp Level	Step Length	Pitch	OFF
				T2 Amp Level	Pitch	None	
D07	Retro BD/SD	Synth Drum	Split	T1			OFF
				T2			
D08	Wet Reed	Keyboard	Single				OFF
D09	Fat Bass	Synth Bass	Single				OFF
D10	Flashlight	Synth Motion	Single				OFF
D11	Stream Pad	Strings	Single				OFF
D12	EP Fusion Ld	Synth Lead	Single				OFF
D13	TremoloSynth	Synth Soft	Single				OFF
D14	Motion Pad	Synth Motion	Single				OFF
D15	Banana Bass	Synth Bass	Dual	T1			OFF
				T2			
D16	Bad Dream	S.E.	Single				OFF
E01	Century Stab	Synth Hard	Single				OFF
E02	Simple Arpg	Arpeggio	Single	EG2 Decay	EG1 Decay	Noise Level	Random
E03	Tin Memoreez	Synth Pad	Single	Panpot	Step Length	None	OFF
E04	Organ Bass	Synth Bass	Single				OFF
E05	High Voltage	Synth Lead	Dual	T1			OFF
				T2			
E06	Trip Planet	Sequence	Dual	T1 Amp Level	OSC1 Level	OSC2 Semi	Up
				T2 EG2 Decay	Amp Level	Pitch	
E07	Dry Plant	Bell	Single				OFF
E08	Reed Piano	Keyboard	Single				OFF
E09	Magnum Bass	Synth Bass	Single				OFF
E10	Mad Lead	Sequence	Single	Amp Level	Step Length	Panpot	OFF
E11	Belly	Choir	Single				OFF
E12	BackInTheDay	Synth Lead	Single				OFF
E13	Synth Brass	Synth Brass	Single				OFF
E14	ElectroShock	Sequence	Dual	T1 Pitch	Cutoff	None	Up
				T2 Cutoff	None	None	
E15	Bakin' Bass	Synth Bass	Single				OFF
E16	Telephone	S.E.	Split	T1			OFF
				T2			
F01	Golden Synth	Synth Hard	Single	OSC2 Tune	None	None	
F02	Blue&White	Arpeggio	Dual	T1			Alt1
				T2			
F03	Pan Tran	Synth Pad	Single	Panpot	None	None	
F04	Warp Bass	Synth Bass	Single				OFF
F05	Killa Lead	Synth Lead	Single				OFF
F06	Tribe'n Beat	Sequence	Dual	T1 Amp Level	OSC2 Level	None	Up
				T2 EG2 Decay	Cutoff	OSC1 Level	
F07	Bound Ball	Bell	Single				OFF
F08	CuttingArpg	Keyboard	Single	EG2 Release	Amp Level	None	Trigger
F09	Bass Machine	Synth Bass	Single				OFF
F10	Trip 2 Ibiza	Sequence	Single	Cutoff	None	None	
F11	Ana Strings	Strings	Single				OFF
F12	Past Mind	Synth Lead	Split	T1 EG1 Attack	Noise Level	Patch1 Int	OFF
				T2 Patch1 Int	None	None	
F13	Future Vibe	Synth Soft	Single				OFF
F14	Euro Synthe	Sequence	Dual	T1 Pitch	None	None	OFF
				T2 Pitch	OSC1 Ctrl2	Panpot	
F15	Digy Bass	Synth Bass	Single				OFF
F16	Thunder	S.E.	Single				OFF

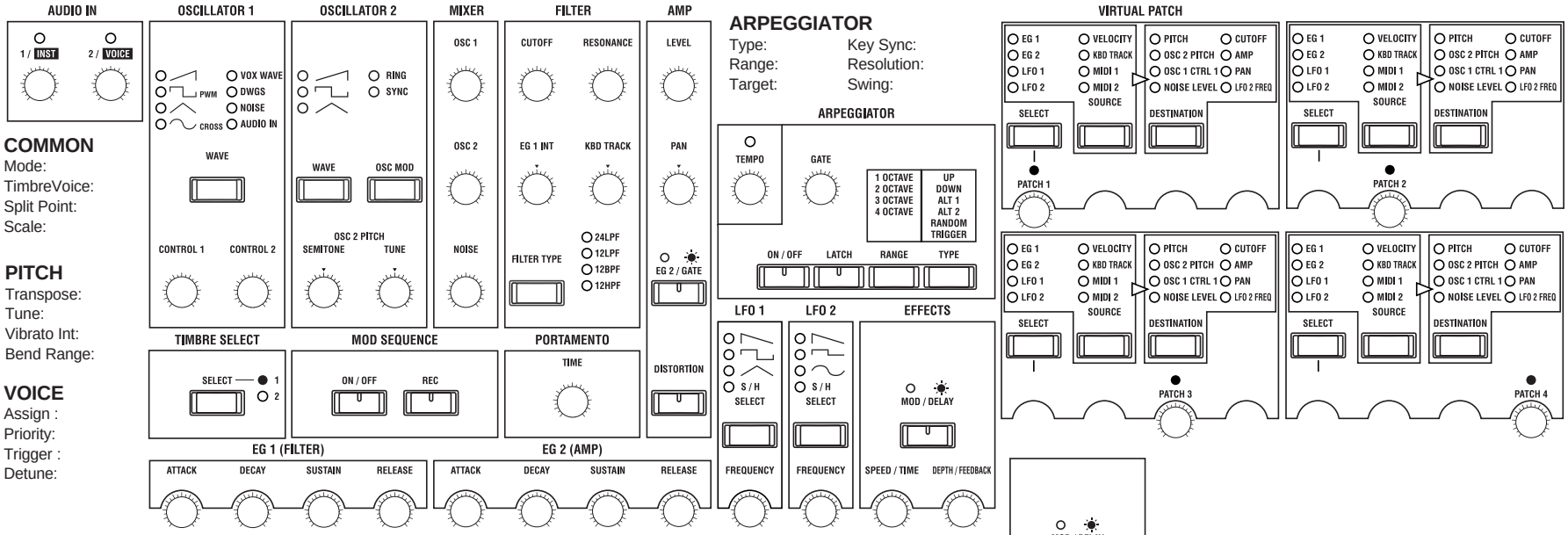
No.	Name	Category	Mode	SEQ 1	SEQ 2	SEQ 3	ARPEGGIATOR
G01	Square Comp	Synth Hard	Single				OFF
G02	Krazy Arpy 2	Arpeggio	Single				Random
G03	Sweep Pad	Synth Pad	Single				OFF
G04	Sub Bass	Synth Bass	Single				OFF
G05	Phenomenon	Synth Lead	Single				OFF
G06	Ready 2 Air	Sequence	Dual	T1 Cutoff	Resonance	Noise Level	OFF
				T2 Pitch	Amp Level	OSC1 Ctrl2	
G07	X-Mod Perc	Bell	Single	EG2 Decay	EG2 Release	Amp Level	Random
G08	BritishOrgan	Keyboard	Single				OFF
G09	80's Bass	Synth Bass	Single				OFF
G10	Min.Deal	Sequence	Dual	T1 Amp Level	None	None	OFF
				T2 Amp Level	None	None	
G11	Astral Vox	Choir	Single				OFF
G12	Rez Lead	Synth Lead	Single				OFF
G13	Soft Brass	Synth Brass	Single				OFF
G14	CPU Talk	Sequence	Single	OSC1 Ctrl1	Resonance	OSC2 Semi	OFF
G15	Phunk Bass	Synth Bass	Single				OFF
G16	Jet Set 2000	S.E.	Single				OFF
H01	Poly400	Synth Hard	Single	Cutoff	None	None	OFF
H02	Diginator	S.E.	Dual	T1 Panpot	None	None	OFF
				T2 Pitch	Amp Level	None	
H03	Light Pad	Synth Pad	Single				OFF
H04	Bass&5thLead	Synth Bass	Split	T1			OFF
				T2			
H05	Woody's Lead	Synth Lead	Single				OFF
H06	Filter Muzik	Sequence	Dual	T1 Pitch	None	OSC2 Semi	OFF
				T2 Noise Level	Cutoff	Pitch	
H07	TimeZone SFX	S.E.	Single				OFF
H08	Pulse Comp	Keyboard	Single				OFF
H09	Vocoder Ens	Vocoder	Vocoder				OFF
H10	Vocoder Cho	Vocoder	Vocoder				OFF
H11	Vocoder Wah	Vocoder	Vocoder				OFF
H12	VocoderPulse	Vocoder	Vocoder				OFF
H13	VoiceChanger	Vocoder	Vocoder				OFF
H14	Vocodevil	Vocoder	Vocoder				OFF
H15	AudioIn INIT	AudioIn	Single				Trigger
H16	Init Program	Init Program	Single				OFF

Single/Split/Dual Program

Program No. :
Program Name:

FILTER
Vel.Sense:

AMP
Vel Sense:
KBD Track:



COMMON
Mode:
TimbreVoice:
Split Point:
Scale:

PITCH
Transpose:
Tune:
Vibrato Int:
Bend Range:

VOICE
Assign :
Priority:
Trigger :
Detune:

ARPEGGIATOR
Type:
Range:
Target:
Key Sync:
Resolution:
Swing:

EG 1
EG Reset:

EG 2
EG Reset:

LFO 1
Key Sync:
Tempo Sync:
Sync Note:

LFO 2
Key Sync:
Tempo Sync:
Sync Note:

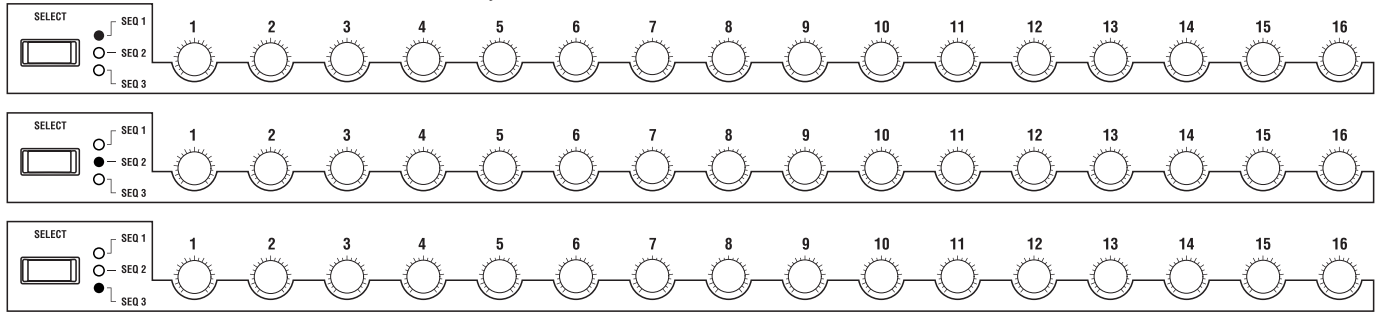
MOD FX
Type:

DELAY FX
Type:
Tempo Sync:
Sync Note:

EQ
LowEQFreq:
LowEQGain:
HiEQFreq:
HiEQGain:

SEQ COMMON
LastStep :
SeqType:
Run Mode:
Key Sync:
Resolution :

SEQ EDIT



SEQ1
Knob:
Motion:

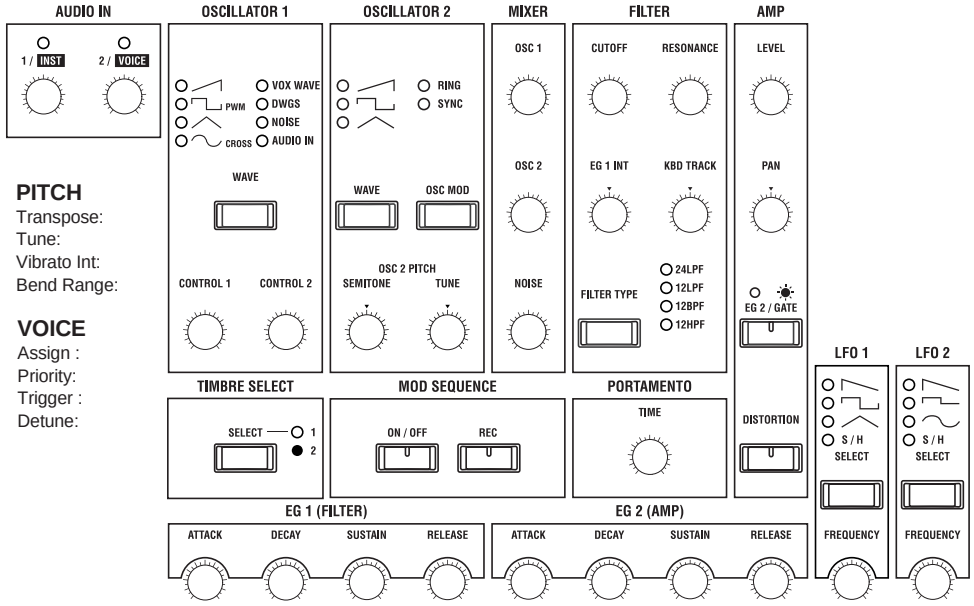
SEQ2
Knob:
Motion:

SEQ3
Knob:
Motion:

Timbre2 (Dual/Split)

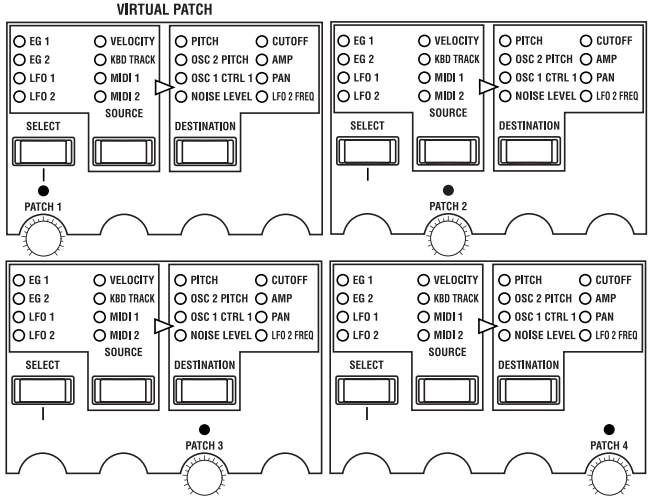
FILTER
Vel.Sense:

AMP
Vel Sense:
KBD Track:



PITCH
Transpose:
Tune:
Vibrato Int:
Bend Range:

VOICE
Assign :
Priority:
Trigger :
Detune:



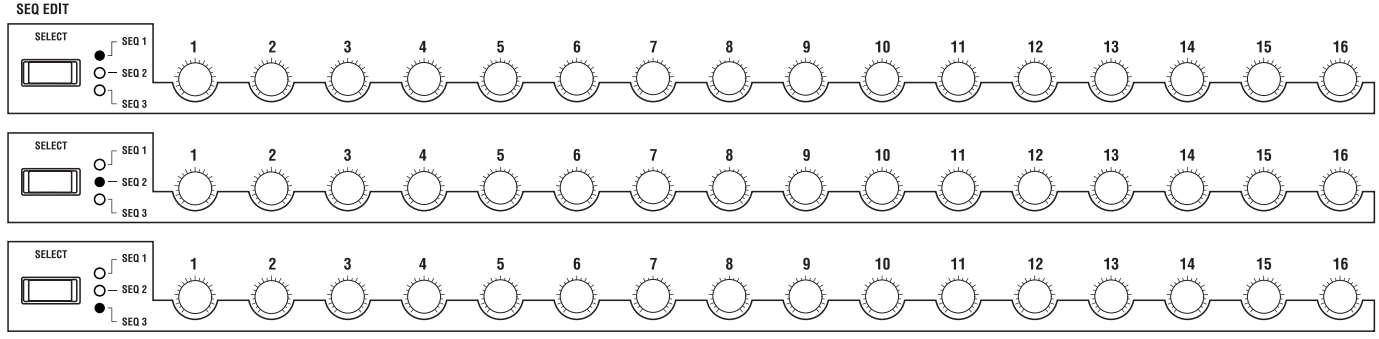
EG 1
EG Reset:

EG 2
EG Reset:

LFO 1
KeySync:
Tempo Sync:
Sync Note:

LFO 2
KeySync:
Tempo Sync:
Sync Note:

SEQ COMMON
LastStep :
SeqType:
Run Mode:
Key Sync:
Resolution :



SEQ1
Knob:
Motion:

SEQ2
Knob:
Motion:

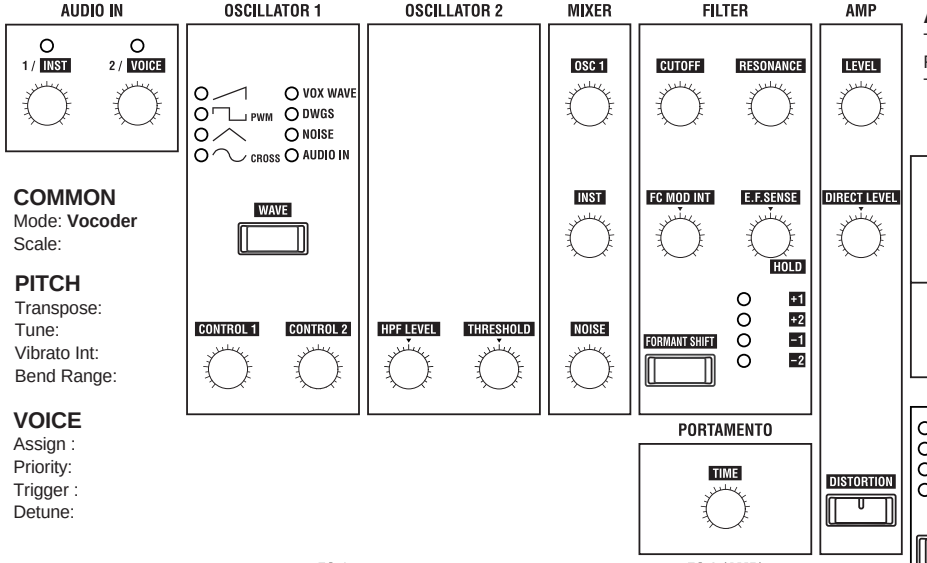
SEQ3
Knob:
Motion:

Vocoder Program

Program No. :
Program Name:

AUDIO IN2
Gate Sense:
HPF Gate:

AMP
Vel Sense:
KBD Track:

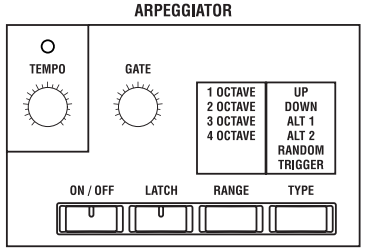


COMMON
Mode: **Vocoder**
Scale:

PITCH
Transpose:
Tune:
Vibrato Int:
Bend Range:

VOICE
Assign :
Priority:
Trigger :
Detune:

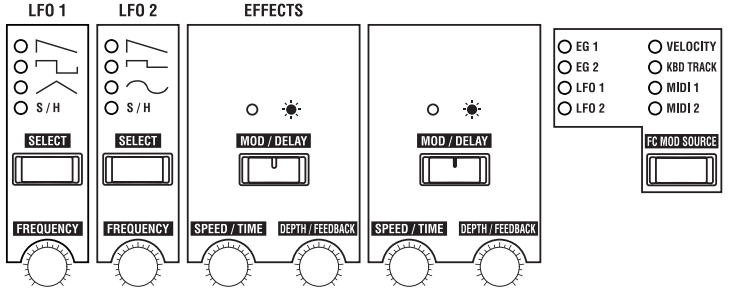
ARPEGGIATOR
Type:
Range:
Target:
Key Sync:
Resolution:
Swing:



MOD FX
Type:

DELAY FX
Type:
Tempo Sync:
Sync Note:

EQ
LowEQFreq:
LowEQGain:
HiEQFreq:
HiEQGain:

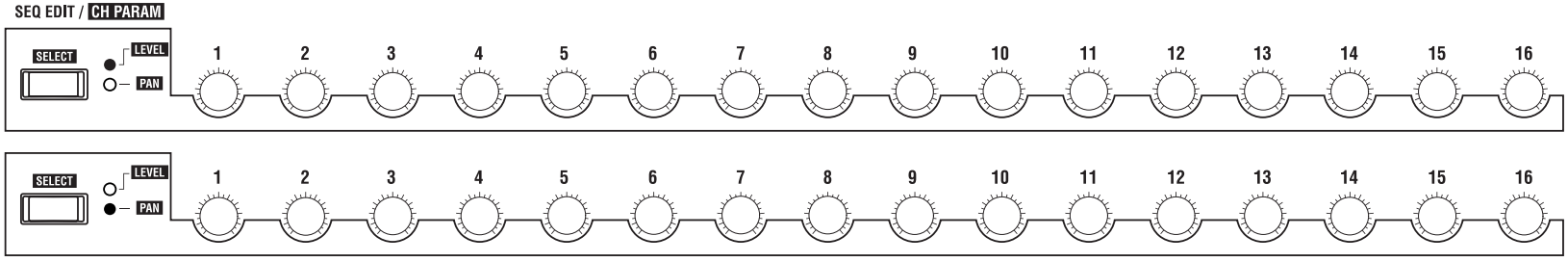


EG 1
EG Reset:

EG 2
EG Reset:

LFO 1
Key Sync:
Tempo Sync:
Sync Note:

LFO 2
Key Sync:
Tempo Sync:
Sync Note:



Troubleshooting

Before you suspect a malfunction, please check the following points.

Power does not turn on

- Is the power cable connected to the outlet?..... p.10
- Is the [POWER/VOLUME] knob turned on? p.12

No sound

- Are the connected devices or headphones connected to the correct jack(s)? p.10
- Are the connected devices powered-on?
- Is the [POWER/VOLUME] knob set to a position where sound will be output? p.12
- Is the Global mode Page 3B: MIDI "Local" setting turned **ON**? p.54
- Were any volume-related parameters set to a value of 0? p.38, 40
- Was the FILTER "Cutoff" set to 0? p.39
- If a pedal is connected to the **MS2000/MS2000R**, is the pedal in a position for which no sound will be produced?

Sound does not stop

- Is the Global mode Page 6A: PEDAL & SW "A.Switch" setting appropriate for the pedal switch that is connected? p.57

Can't write programs or global settings

- Is Global mode Page 2A: MEMORY "Protect" turned **OFF**? p.30, 54

Transpose or velocity curve is not transmitted/ received correctly

- Is Global mode Page 1C: Global "Position" set appropriately? p.53

Arpeggios do not start

- Is the arpeggiator turned on ([ON/OFF] key lit)?..... p.15
- Is Global mode Page 3C: MIDI "Clock" set to **Internal**? p.54

No response to MIDI messages sent from an external device

- Is the MIDI cable connected correctly? p.10
- Does the MIDI channel of the data transmitted from the external MIDI device match the global MIDI channel of the **MS2000/MS2000R**? p.11

Does not respond correctly to MIDI messages sent from an external device

- Are the various parameters of Global mode Page 4: MIDI FILTER set to ENA?..... p.55

Specifications and options

Tone generator system
Analog modeling synthesis system

- Synth programs
  Multi-timbral capability: maximum two timbres (for Split/Dual)
  4 voices, 2 oscillators + noise generator, EG × 2, LFO × 2, virtual patch × 4, MOD sequence (maximum 16 steps × 3)
- Vocoder programs
  4 voices, 1 oscillator + noise generator, EG × 2, LFO × 2
  16 channel vocoder, adjustable level and pan for each channel, Formant Shift function

Tone generator
- 4 voice, 2 oscillator + noise generator

Keyboard (MS2000)
- 44 notes (no aftertouch)

Effects
- Modulation effect (3 types), delay (3 types), equalizer

Arpeggiator
- 6 types

Programs
- 16 programs × 8 (total 128 programs)

Inputs
- AUDIO IN 1 jack

Input impedance	39 [kΩ]
Maximum input level	–3.5 [dBu] (AUDIO IN [1/INST] knob: Max)
Source impedance	600 [Ω]

- AUDIO IN 2 jack (with MIC/LINE switch)

AUDIO IN 2 [LINE]	
Input impedance	39 [kΩ]
Maximum input level	–3.5 [dBu] (AUDIO IN [2/VOICE] knob: Max)
Source impedance	600 [Ω]
AUDIO IN 2 [MIC]	
Input impedance	22 [kΩ]
Maximum input level	–33 [dBu] (AUDIO IN [2/VOICE] knob: Max)
Source impedance	600 [Ω]

Outputs
- L/MONO, R jacks

Output impedance	1.1 [kΩ] (MONO: 550Ω)
Maximum output level	+6.5 [dBu]
Load impedance	100 [kΩ]

- Headphone jack

Output impedance	10 [Ω]
Maximum output level	35 [mW]
Load impedance	33 [Ω]

Control inputs
- ASSIGNABLE PEDAL jack
- ASSIGNABLE SW jack

MIDI
- IN, OUT, THRU connectors

Display
- 16 character (8 × 5 pixel) × 2 line LCD module (with backlight)

Power supply
- DC 9V, 8 W

Dimensions
- MS2000: 737.8 (W) × 371.3 (D) × 147.7 (H) mm
- MS2000R: 482.0 (W) × 233.2 (D) × 87.1 (H) mm [five-space rack mount]

Weight
- MS2000: 7.1 kg
- MS2000R: 2.8 kg

Included items
- AC adapter (DC9V)
- Washers ×4, Bushing ×4, Screws ×4 (MS2000R only)

Options
- EXP-2 expression pedal
- XVP-10 EXP/VOL pedal
- PS-1 pedal switch
- DS-1H damper pedal

* Appearance and specifications of this product are subject to change without notice.

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MS2000, MS2000R

MIDI Implementation Chart

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1 – 16	1 – 16	Memorized
	Changed	1 – 16	1 – 16	
Mode	Memorized	X	3	
	Messages	X	X	
	Altered	**********	X	
Note Number:	True Voice	*5 – 120 / 21 – 108	0 – 127	*: MS2000 / MS2000R
		**********	0 – 127	
Velocity	Note On	O 1 – 127	O 1 – 127	
	Note Off	O 64	X	
Aftertouch	Polyphonic (Key)	X	X	
	Monophonic (Channel)	O	O	∗1
Pitch Bend		* O / X	O	*: MS2000 / MS2000R ∗B
Control Change	1	* O / X	O	Modulation wheel ∗1
	2	O	O	Breath Controller ∗1, ∗C
	4	O	O	Foot controller ∗1, ∗C
	6	O	O	Data Entry (MSB) ∗C
	7	O	O	Volume ∗1, ∗C
	10	O	O	Panpot ∗1, ∗C
	11	O	O	Expression ∗1, ∗C
	64	O	O	Damper ∗1, ∗C
	65	O	O	Portamento ∗1, ∗C
	98, 99	O	O	NRPN (LSB, MSB) ∗C
	120, 121	X	O	All sound off, Reset all controllers ∗C
	0 – 95	X	O	Virtual patch source ∗2, ∗C
	0 – 95	O	O	Sync control ∗C
	0 – 95	O	O	Timbre select ∗C
	0 – 95	O	O	Panel controls (knobs, switches) ∗3, ∗C *: MS2000 / MS2000R
Program Change		O 0 – 127	O 0 – 127	∗P
	Variable Range	**********	0 – 127	
System Exclusive		O	O	∗4, ∗E
System Common	Song Position	X	X	
	Song Select	X	X	
	Tune	X	X	
System Real Time	Clock	O	O	∗P
	Command	X	O	∗P
Aux Messages	Local On/Off	X	X	
	All Notes Off	X	O 123 – 127	
	Active Sense	O	O	
	Reset	X	X	

Remarks *P, *B, *C, *E: Transmitted/received when Global mode Page 4: MIDI Filter (ProgChg, CtrlChg, P.Bend, SystemEx) settings are respectively ENA.

*1: Transmitted according to the Global mode Page 6: PEDAL & SW “A.Pedal” and “A.SwFunc” settings.

*2: Received according to the Global mode Page 3: MIDI “MIDI 1” and “MIDI 2” settings.

*3: Received according to the Global mode Page 5: CTRL CHANGE setting.

*4: In addition to Korg exclusive messages, Inquiry messages, Master Volume messages and Master Fine Tune messages are also supported.

*5: When the Global mode Page3C: MIDI “Clock” is internal, transmitted but not received. The opposite for External or Auto.

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO O : Yes

Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO X : No

Consult your local Korg distributor for more information on MIDI IMPLEMENTATION.